

VOL. II, Part III.

5th April, 1928.

THE
PROCEEDINGS
OF THE
ENTOMOLOGICAL SOCIETY
OF
LONDON



LONDON:
PUBLISHED BY THE SOCIETY AND
SOLD AT ITS ROOMS, 41, QUEEN'S GATE, S.W. 7

[Price 6s. 0d.]

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OF THE

ENTOMOLOGICAL SOCIETY OF LONDON.

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Date of
Election.

- 1900 AURIVILLIUS, Professor Christopher, *Stockholm*.
- *1915 BERLESE, Professor Antonio, *via Romana, 19, Firenze, Italy*.
- 1905 BOLIVAR, Ignacio, *Museo nacional de Historia natural, Hipodromo, 17, Madrid*.
- 1911 COMSTOCK, Prof. J. H., *Cornell University, Ithaca, New York, U.S.A.*
- 1894 FOREL, Professor Auguste, M.D., *Yverne, Canton de Vaud, Switzerland*.
- 1925 GESTRO, Prof. R., *Direttore del Museo Civico di Storia Naturale, Genova, Italy*.
- 1926 HORVATH, Dr. Geza, *Museum Nationale Hungaricum, Budapest, Hungary*.
- 1915 ‡ HOWARD, Dr. L. O., *Ex-Chief, Bureau of Entomology, U.S. Dept. of Agriculture, Washington, U.S.A.*
- 1914 LAMEERE, Professor A., 74, *rue Defarg, Bruxelles*.
- 1918 MARCHAL, Dr. Paul, President of the Entomological Society of France, 45, *rue de Verrières, Antony, Seine, France*.
- 1913 SEMENOFF, Tian-Shanski A. P., *Vassili Ostrov, 8 lin., 39, Petrograd, Russia*.
- 1911 WASMANN, Fr. Erich, S.J., *Valkenburg (L.) Ignatius Kolleg, Holland*.

SPECIAL LIFE FELLOWS.

Date of
Election.

- 1926 (1891) FROHAWK, F. W., *Essendene, Cavendish-road, Sutton, Surrey*.
 - 1923 (1889) JOHNSON, The Rev. W. F., M.A., *St. Aidan's, Rostrevor, Co. Down, Ireland*.
 - 1926 (1890) NEWSTEAD, Prof. R., M.Sc., F.R.S., A.L.S., Hon. F.R.H.S., *St. Mary's Cottage, 67, Handbridge, Chester*.
 - *1916 (1888) YERBURY, Colonel John W., late R.A., F.Z.S. (COUNCIL, 1896, 1903-5),
1, *St. James' Place, S.W. 1*.
-

FELLOWS.

(The names of those who have not yet paid either the Entrance Fee or the first year's subscription are not included.)

Marked * died during the year 1927.

Marked † have compounded for their Annual Subscriptions.

Marked ‡ have been formally admitted into the Society (to Dec. 1927).

Date of
Election.

- *1914†‡ ADAIR, E. W., B.A., 34, Rue de la Garrigue, Nimes (Gard), France.
- 1913 ‡ ADAMS, B. G., 15, Fernshaw-road, Chelsea, S.W.
- 1902 ‡ ADKIN, B. W., Trenoweth, Hope-park, Bromley, Kent.
- 1885 ‡ ADKIN, Robert (V.-PRES., 1922; COUNCIL, 1901-2, 1911-13, 1921-3, 1927-), Hodeslea, Meads, Eastbourne.
- 1921 ALEXANDER, Prof. C. P., Fernald Hall, Mass. Agricultural College, Amherst, Mass., U.S.A.
- 1922 ALLEN, Donald, Carlton House, Middleton-street, Llandrindod Wells, Rad.
- 1920 ‡ ALTON, A. M., The Mount, Windlesham, Surrey.
- 1924 ‡ AMIRTHALINGAN, C., The Laboratory, Citadel Hill, Plymouth.
- 1911 ANDERSON, T. J., Entomological Laboratory, Kabete, Kenya Colony.
- 1919†‡ ANDREWES, Dr. C. H., 54, Brent-way, Church End, Finchley, N. 3.
- 1910†‡ ANDREWES, H. E. (COUNCIL, 1920-2), 8, North-grove, Highgate, N. 6.
- 1922 ‡ ANDREWES, H. L., c/o John Heelas, Esq., Queen Anne's Mansions, S.W.
- 1899 ‡ ANDREWS, Henry W., 6, Footscray-road, Eltham, S.E. 9.
- 1901 ‡ ANNING, William, 15, Arthur-street West, E.C. 4.
- 1908 † ANTRAM, Charles B.
- 1927 ARMSTRONG, R. R., B.A., M.D., B.Ch., 6, Castelnau-gardens, Barnes, S.W. 13.
- 1913 ‡ ARMYTAGE, Edward O., c/o The Westminster Bank, Ltd., 25, Sussex-place, S.W. 7.
- 1907 ‡ ARNOLD, G., D.Sc., A.R.C.S., Rhodesia Museum, Bulawayo, South Africa.
- 1899†‡ ARROW, G. J. (COUNCIL, 1905-7), 9, Rosedale-road, Putney, S.W. 15; and British Museum (Natural History), Cromwell-road, S.W. 7.
- 1922 ARTHUR, Francis, M.R.C.S., L.R.C.P., 395, Bethnal Green-road, E. 2.
- 1911 ‡ ASHBY, E. B., 36, Bulstrode-road, Hounslow, Middlesex.
- 1907†‡ ASHBY, Sidney R., 37, Hide-road, Headstone, Harrow.
- 1925 ASHWORTH, J. H., Walton Fold, Longridge, Preston, Lancs.
- 1921 ATKINSON, D. J., Ataran Forest Division, Moulmein, Burma.
- 1886 ATMORE, E. A., 2A, New Conduit-street, King's Lynn.
- 1927 ATTIA, R., A.R.C.S., B.Sc., Cotton Research Board, Giza, Egypt.
- 1914 AWATI, P. R.
- 1922 ‡ BABAUT, G., 10, rue Camille-Perier, Chaton, Seine-et-Oise, France.
- 1904†‡ BAGNALL, Richard S.
- 1909 ‡ BAGWELL-PUREFOY, Capt. Edward, F.Z.S., East Farleigh, Maidstone.
- 1903-1913, 1924 :
- ‡ BALDOCK, G. R., Oakburn Villa, Hertford-road, Enfield.

- 1916 ‡ BALFOUR, Miss Alice, 4, *Carlton-gardens*, S.W., and *Whittingehame*, *Preston-kirk*, *Scotland*.
- 1921 ‡ BALFOUR-BROWNE, Prof. W. A. F., F.R.S.E., F.Z.S. (COUNCIL, 1925-7), *Winscombe Court*, *Winscombe*, *Somerset*.
- 1912 ‡ BALLARD, E., *c/o Lloyd's Bank, Ltd.*, *Corn-street*, *Bristol*.
- 1886 ‡ BANKES, Eustace R., M.A.
- 1890 BARCLAY, Francis H., F.G.S., *The Warren*, *Cromer*.
- 1925 BARNES, W., M.D., *Decatur*, *Illinois*, U.S.A.
- 1902 ‡ BARRAUD, P. J., *Central Research Institute*, *Kasauli*, *Punjab*, *India*.
- 1926 BARRINGTON, Miss J., B.A., *St. Leonards School*, *St. Andrews*, N.B.
- 1907 ‡ BARTLETT, H. Frederick D., *Island of St. Helena*, *S. Atlantic*.
- 1908 BAYFORD, E. G., 2, *Rockingham-street*, *Barnsley*.
- 1912 ‡ BAYNES, E. S. A., *Monkshatch Cottage*, *Compton*, *Guildford*, *Surrey*.
- 1896†‡ BEARE, Prof. Sir T. Hudson, B.Sc., F.R.S.E. (V.-PRES., 1910; COUNCIL, 1909-11, 1925-7), 10, *Regent-terrace*, *Edinburgh*.
- 1912 BEDFORD, Gerald, Entomologist to the Union of South Africa, *Veterinary Bacteriological Laboratory*, *Ondestepoort*, *Pretoria*, *Transvaal*.
- 1913 BEDFORD, Capt. H. W., *W.T.R. Laboratories*, *Khartoum*, *Sudan*.
- 1899 ‡ BEDWELL, Ernest C. (V.-PRES., 1922; COUNCIL, 1917-19, 1922-4), *Bruggen*, *Brighton-road*, *Coulsdon*, *Surrey*.
- 1927 BEENEY, F. W., *The Old College*, *Windermere*, *Westmoreland*.
- 1920 ‡ BEESON, C. F. C., *Indian Forest Service*, *Forest Research Institute*, *Dehra Dun*, *U.P.*, *India*.
- 1927 ‡ BELL, J. H., *Maiden Lodge*, *Caterham Valley*, *Surrey*.
- 1904 BENGTSOON, Simon, Ph.D., Lecturer, *University of Lund*, *Sweden*; Curator, Entomological Collection of the University.
- 1915 BENHAM, Prof. W. B., M.A., D.Sc., F.R.S., *University of Otago*, *Dunedin*, *New Zealand*.
- 1925 ‡ BENSON, R. B., B.A., *Boldre House*, *Berkhamsted*, *Herts*.
- 1906 ‡ BENTALL, E. E., *The Grove*, *Witham*, *Essex*.
- 1913 ‡ BEST-GARDNER, Charles C., *Rookwood*, *Neath*, *Glamorgan*.
- *1920 ‡ BETHELL, George, F.R.Hist.S., F.L.A.
- 1885 ‡ BETHUNE-BAKER, George T., F.L.S., F.Z.S. (PRES., 1913-14; V.-PRES., 1910-11, 1915; COUNCIL, 1895, 1910-15, 1919-21), 9, *Eversfield-road*, *Eastbourne*.
- 1891 ‡ BLABER, W. H., F.L.S., 34, *Cromwell-road*, *Hove*, *Brighton*.
- 1904 ‡ BLAIR, Kenneth G., B.Sc. (COUNCIL, 1918-20), *Claremont*, 120, *Sunning-fields-road*, *Hendon*, *N.W.* 4.
- *1921 BLENKARN, S. A., 44, *Rannock Lodge*, *Grovelands-road*, *Purley*, *Surrey*.
- 1904 ‡ BLISS, M. F., M.C., M.R.C.S., L.R.C.P., *Branston*, *nr. Rugby*.
- 1903 BOGUE, W. A., 34, *Handen-road*, *Lee*, *S.E.* 12.
- 1921 ‡ BOLTON-KING, E., *Christ Church*, *Oxford*.
- 1902 ‡ BOSTOCK, E. D., *Oulton Cross*, *Stone*, *Staffs*.
- 1921 BOUCK, Baron J., *Springfield*, *South Godstone*, *Surrey*.
- 1927 BOWHILL, J. W., *Morelands*, *Grange-loan*, *Edinburgh*.
- 1894 ‡ BOWLES, E. Augustus, M.A., *Myddelton House*, *Waltham Cross*.
- 1912 ‡ BOWRING, C. Talbot, *St. Francis*, *Benfield-way*, *Portslade*, *nr. Hove*, *Sussex*.
- 1921 ‡ BOX, H. E., *Agricultural Experimental Station*, *Tucuman*, *Argentina*.

- 1919 † BOX, L. A., 35, *Great James-street*, W.C. 1.
 1910 BOYD, A. Whitworth, *Frandle House*, nr. *Northwich*.
 1920 BOYD, Major J. E. M., M.C., No. 19 Coy., *R.A.M.C.*, *Orford Barracks*, *Warrington*.
 1905 BRACKEN, Charles W., B.A., 8, *De la Hay Villas*, *Plymouth*.
 1919 BRADLEY, Prof. J. Chester, M.Sc., Professor of Entomology and Curator of Invertebrate Zoology, *Cornell University*, *Ithaca*, *New York*, *U.S.A.*
 1920 † BRENCHELEY, Dr. Winifred E., D.Sc., F.L.S., *Rothamsted Experimental Station*, *Harpenden*, *Herts*.
 1894 † BRIGHT, P. M., *Colebrook Grange*, 58, *Christchurch-road*, *Bournemouth*.
 1924 † BRINDLEY, Mrs. M. E., 25, *Madingley-road*, *Cambridge*.
 1923 BRITTEN, G., *Riwaka*, *Nelson*, *N.Z.*
 1909 † BRITTEN, Harry, 22, *Birch-grove*, *Levenshulme*, *Manchester*.
 1925 † BROOKS, C. J., 11, *Carlton Mansions*, *West End-lane*, N.W. 6.
 1902 † BROUGHTON, Lt.-Col. T. D., R.E., *Cheena Hall*, *Naini Tal*, *India*.
 1919 BROWN, J. M., B.Sc., F.L.S., 176, *Carterknowle-road*, *Millhouses*, *Sheffield*.
 1910 BROWNE, H. B., M.A., *Kenilworth*, *Scatcherd-lane*, *Morley*, *Yorks*.
 1909 BRYANT, Gilbert E., 163, *Gloucester-terrace*, *Hyde Park*, W. 2.
 1898 † BUCHAN-HEPBURN, Sir Archibald, Bart., J.P., D.L., *Smeaton-Hepburn*, *Prestonkirk*.
 1919 † BUCKHURST, A. S., *Pathological Laboratory*, *Milton Road*, *Harpenden*.
 1925 † BULL, G. V., B.A., M.B., *Whitegables*, *Sandhurst*, *Kent*.
 1907 BULLEID, Arthur, F.S.A., *Dimboro*, *Midsomer Norton*, *Somersetshire*.
 1922 BURNS, A. N., Sugar Experiment Station, *Meringa*, via *Cairns*, *N. Queensland*, *Australia*.
 1896†† BURR, Malcolm, D.Sc., F.G.S., A.R.S.M. (V.-PRES., 1912; COUNCIL, 1903-4, 1910-12), *United Univ. Club*, *Pall Mall East*, S.W. 1; *Trans. to:—Moscow*, *Petrovskaia Agricultural Academy*, Prof. V. F. Boldyrev.
 1920 BURRAS, A. E., 3, *Connaught-road*, *North End*, *Portsmouth*.
 1909 † BURROWS, The Rev. C. R. N., *The Vicarage*, *Mucking*, *Stanford-le-Hope*, *Essex*.
 1922 † BUSHBY, L. C., 11, *Park-grove*, *Bromley*, *Kent*.
 1920 † BUSHELL, Capt. H. S., *Ravensholt*, *Harrow-on-the-Hill*.
 1922 BUTLER, A. E., c/o *Westminster Bank, Ltd.*, *Clevedon*, *Somerset*.
 1914 † BUTTERFIELD, R., Curator, *Corporation Museum*, *Keighley*, *Yorks*.
 1912†† BUXTON, P. A., M.A. (COUNCIL, 1926-), *Grit Howe*, *Gerrard's Cross*, *Bucks*.
 1902 † CAMERON, Malcolm, M.B., R.N. (COUNCIL, 1919-20), 15, *Teesdale-road*, *Leytonstone*, E. 11.
 1913 † CAMERON, W. P. L., *Gezira Research Farm*, *Wad Medani*, *Blue Nile Province*, *Sudan*.
 1923 † CAMPBELL-TAYLOR, J. E., *Barclay's Bank House*, *Pembroke Dock*, *S. Wales*.
 1910 CARLIER, E. Wace, M.D., F.R.S.E., *Morningside*, *Granville-road*, *Dorridge*, and *The University*, *Birmingham*.
 1924 † CARLIER, S. E. Wace, *Morningside*, *Dorridge*, *Warwickshire*.
 1892 † CARPENTER, The Hon. Mrs. Beatrice, 22, *Grosvenor-road*, S.W. 1.
 1919 CARPENTER, C. F. G.

- 1910†† CARPENTER, G. D. Hale, D.M., M.B.E. (*East African Medical Service*), *Entebbe, Uganda*.
- 1895 ‡ CARPENTER, George H., D.Sc., M.R.I.A., *The Manchester Museum, The University of Manchester*.
- 1915 CARR, Professor John Wesley, M.A., F.L.S., F.G.S., Professor of Biology, *University College, Nottingham*.
- 1912 CARTER, H. F., *The Bacteriological Institute, Colombo, Ceylon*.
- 1906 ‡ CARTER, H. J., B.A., *Garrawillah, Kintore-street, Wahroonga, Sydney, N.S.W.*
- 1921 CASSELS, O. C., D.F.C., N.D.A.
- 1921 CASTLE, Miss Amy, *Dominion Museum, Wellington, New Zealand*.
- 1921 ‡ CATOR, Douglas, 13, *Westminster-mansions, Gt. Smith-street, S.W. 1*.
- 1889†† CAVE, Charles J. P.
- 1920 ‡ LE CERF, F., Curator of Lepidoptera in the Paris Museum, 13, *rue Guy de la Brosse, Paris*.
- 1900 CHAMBERLAIN, the Rt. Hon. Neville, *Westbourne, Edgbaston, Birmingham*.
- *1871 ‡ CHAMPION, George C., F.Z.S., A.L.S. (VICE-PRES., 1925; LIBRARIAN, 1891–1920; COUNCIL, 1875–7, 1921, 1924–6), *Bromhall-road, Horsell, Woking*; and 45, *Pont-street, S.W. 1*.
- 1914 ‡ CHAMPION, H. G., M.A., *Forest Research Institute, Dehra Dun, U.P., India*.
- 1913 CHASEN, F. N., M.B.O.U., *Raffles Museum, Singapore*.
- 1919 CHATTERJEE, N. C., B.Sc., *Forest Research Institute, Dehra Dun, U.P., India*.
- 1923 CHATTERJEE, S. N., *Forest Research Inst., Dehra Dun, U.P., India*.
- 1897 ‡ CHAWNER, Miss Ethel F., *Thatched Holme, Wargrave, Berks*.
- 1913 ‡ CHEAVIN, W. H. S., F.C.S., F.R.M.S., 19, *Rosendale-road, W. Dulwich, S.E. 21*.
- 1919 CHEESMAN, Miss L. Evelyn, 20, *Maitland Park Villas, Hampstead, N.W.*
- 1920 ‡ CHEETHAM, C. A., *Stone Bridge Mills, Wortley, Leeds*.
- 1889 CHRISTY, William M., M.A., F.L.S., *Watgate, Emsworth*.
- 1909 CLARK, Lt.-Col. C. Turner, F.Z.S., *The Hutch, Shirley Warren, Southampton*.
- 1923 CLARKE, C. E., 35, *Octagon, Dunedin, N.Z.*
- 1914 CLEARE, L. D., *Dept. of Science and Agriculture, Georgetown, British Guiana*.
- 1922 CLUTTEN, Wm. George, 136, *Coal Clough-lane, Burnley*.
- 1908 CLUTTERBUCK, Charles G., *Heathside, 23, Heathville-road, Gloucester*.
- 1908 CLUTTERBUCK, Sir Peter, c/o *The Oriental Club, 18, Hanover-square, W. 1*.
- 1904 ‡ COCKAYNE, E. A., M.A., M.D., F.R.C.P., VICE-PRESIDENT (COUNCIL, 1915–17, 1926–), 116, *Westbourne-terrace, W. 2*.
- 1920 COCKCROFT, T., 111, *Owen-street, Wellington South, New Zealand*.
- 1917 ‡ COCKERELL, Prof. T. D. A., *University of Colorado, Boulder, Colorado, U.S.A.*
- 1917 ‡ COCKS, Frederick, 42, *Crown-street, Reading*.
- 1927 COE, R. L., 40, *Malden Hill-gardens, New Maldon, Surrey*.
- 1914 COLEMAN, Leslie C., Dept. of Agriculture, *Bangalore, Mysore, India*.
- 1922 ‡ COLLENETTE, C. L., *Gothic Lodge, Woodford Green, Essex*.
- 1899 ‡ COLLIN, James E., PRESIDENT (V.-PRES., 1913, 1923; COUNCIL, 1904–6, 1913–15, 1923–5), *Sussex Lodge, Newmarket*.
- 1918 COMSTOCK, Dr. J. A., Director, *South-Western Museum, Marmion-way and avenue, Los Angeles, California, U.S.A.*
- 1924 ‡ COOKE, Brig.-Genl. B. H., C.M.G., C.B.E., D.S.O., *Inniscrone, Datchet, Bucks*.

- 1921 COOTE, F. D., 71, *Fenchurch-street*, E.C. 3.
 1924 CORBETT, G. H., 576, *Gardens Hill*, Kuala Lumpur, F.M.S.
 1916 CORNFORD, The Rev. Bruce, 13, *Havelock-road*, Portsmouth.
 1921 ‡ CORPORAAL, J. B., *Zoological Museum, Plantage Middenlaan, Amsterdam*.
 1924 COTT, H. B., 9, *Old Orchard-road*, Eastbourne.
 1923 COTTAM, R., *Entomological Dept., Wellcome Tropical Research Laboratory, Khartoum, Sudan*.
 1920 ‡ COTTERELL, G. S., *Newlyn, Gerrard's Cross, Bucks*.
 1913 COWARD, T. A., F.Z.S., 36, *George-street*, Manchester.
 1923 ‡ COX, L. G., 9, *Chichester-terrace*, Brighton.
 1920 ‡ CRABBE, E., 52, *Sarsfield-road*, Balham, S.W. 12.
 1895 CRABTREE, B. H., *Holly Bank, Alderley Edge, Cheshire*.
 1919 CRAMPTON, Prof. G. Chester, *Massachusetts Agricultural College, Amherst, Mass., U.S.A.*
 1922 ‡ CRAWFORD, Wm. Monod, B.A., *Orissa, Marlborough-park, Belfast*.
 1909 ‡ CRAWLEY, W. C., B.A., F.R.M.S. (COUNCIL, 1917-19), 29, *Holland Park-road*, W. 14.
 1907 ‡ CROFT, E. O., M.D., *Wyndley, Harrowby-crescent, Far Headingley, Leeds*.
 1919 ‡ CUMMING, B. D., *Whistman's Wood, West Clandon, Surrey*.
 1927 CUNLIFFE, N., *The School of Rural Economy, University of Oxford*.
 1908 CURTIS, W. P., *Drake North, Sandringham-road, Parkstone, Dorset*.
 1911 DAVEY, H. W., *Cobungua, 19, Moama-road, E. Malvern, Australia*.
 1913 ‡ DAVIDSON, James, D.Sc., F.L.S. (COUNCIL, 1922-4), *Institute of Plant Pathology, Rothamsted, Harpenden, Herts*.
 1912 DAVIS, F. L., J.P., M.R.C.S., L.R.C.P., *Corozal, British Honduras*.
 1910 ‡ DAWSON, W. G., *Beechwood, 11A, Oaklands-road, Bromley, Kent*.
 1903 DAY, F. H., 26, *Currock-terrace*, Carlisle.
 1898 DAY, G. O., *Sahlatston, Duncan's Station, Vancouver Island, British Columbia*.
 1923 DEAN, J. D., *Colin, Llandaff, Glam*.
 1923 DEWAR, D. A., M.B., C.M., *Altyre House, Stanley, S.O., Co. Durham*.
 1917 ‡ DICKSEE, Arthur, 24, *Lyford-road, Wandsworth Common, S.W. 18*.
 1925 DIGGES, Rev. J. G., M.A., *Glooncahir, Mohill, Co. Leitrim, Ireland*.
 1887 ‡ DIXEY, Frederick Augustus, M.A., M.D., F.R.S., Fellow and Bursar of Wadham College (PRES., 1909-10; V.-PRES., 1904-5, 1911; COUNCIL, 1895, 1904-6), *Wadham College, Oxford*.
 1921 DOBSON, H. W., 14, *Finkle-street*, Kendal.
 1909 ‡ DOBSON, Thomas, 33, *The Park, Sharples, Bolton*.
 1905 DODD, Frederick P., *Kuranda, via Cairns, Queensland*.
 1912 ‡ DOIG, Major K. A. C., R.A.M.C., L.R.C.P., *Karundus Estate, P.O. Nyeri, Kenya Colony*.
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 1924 ‡ DRUITT, Alan, *Willow Lodge, Christchurch, Hants*.

- 1900 DRURY, W. D., *Stepaside*, 50, *St. Helen's Park-road*, *Hastings*.
- 1921 DU PORTE, E. M., *Macdonald College*, *Quebec, Canada*.
- 1894 DUDGEON, G. C., C.B.E., 182, *Cromwell-road*, S.W. 7.
- 1913 DUFFIELD, C. A. W., *Pickersden*, *Brook Ashford, Kent*.
- 1906 ‡ DUKINFELD JONES, E., *Box 1831, Mountain-street*, *Glendale, California, U.S.A.*
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- 1924 DUTT, A., B.A., B.Sc., *Asst. Entomologist*, *Rustam, Dept. of Agriculture, Baghdad (Iraq)*.
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- 1910 GURNEY, William B., *Govt. Entomologist, Department of Agriculture, Sydney, Australia.*

- 1912 HACKER, Henry, *Queensland Museum, Brisbane, Queensland.*
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- 1925 ‡ HAIG-THOMAS, P., *The Grange, Goring-on-Thames.*
- 1906 ‡ HALL, Arthur, "*Bowness*," *Brighton-road, Purley, Surrey.*
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- 1921 ‡ HALL, W. J., *The B.S.A. Co's Citrus Estate, Mazoe, Southern Rhodesia.*
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- 1903 ‡ HARE, E. J., 4, *New-square, Lincoln's Inn, W.C. 2.*
- 1920 ‡ HARGREAVES, E., *Lands and Forest Dept., Freetown, Sierra Leone.*
- 1920 HARGREAVES, H., *The Lindens, Kennington, Ashford, Kent.*
- 1926 HARMSWORTH, H. A. B., 3, *Marlborough Gate, Hyde Park, W. 2.*
- 1926 HARRIS, R. H., *P.O. Empangeni, Zululand, S. Africa.*
- 1925 HARUKAWA, C., *Ohara Institute, Kurashiki, Okayama-Ken, Japan.*
- 1910 ‡ HARWOOD, Philip, c/o *Westminster Bank, Ltd., 92, Wimborne-road, Winton, Bournemouth.*
- 1926 HATCH, Melville H., *Dept. of Zoology, University of Washington, Seattle, Wash., U.S.A.*
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- 1927 HAWKINS, C. N., 23, *Dalebury-road, Upper Tooting, S.W. 17.*
- 1913 ‡ HAWKSHAW, Oliver, *Holly Combe, Liphook, Hants.*
- 1924 HAYWARD, A. R., *Misterton, Somerset.*
- 1919 ‡ HAYWARD, H. C., M.A., *Repton, Derby.*
- 1921 ‡ HAYWARD, Capt. K. J., *The Vicarage, Bruton, Somerset.*
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- 1919 ‡ HEMMING, Capt. A. F., C.B.E., F.Z.S., 29, *West Cromwell-road, S.W. 5.*
- 1910 HENDERSON, J., c/o *Messrs. Osborne & Chappel, Ipoh, Perak, Federated Malay States.*
- 1918 HERROD-HEMPSALL, J., *Orchard House, Stockingstone-road, Luton, Beds.*
- 1903 HERROD-HEMPSALL, W., W.B.C. *Apiary, Old Bedford-road, Luton, Beds.*
- 1925 HESSE, Dr. A. T., *South African Museum, Cape Town, S. Africa.*
- 1913 HEWITT, John, B.A., *Director, Albany Museum, Grahamstown, S. Africa.*
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- 1922 ‡ HIGGINS, L. G., M.A., F.R.C.S., *Linkwood, Woking, Surrey.*
- 1924 HINGSTON, Major R. W. G., c/o *Lloyds Bank, Ltd., 6, Pall Mall, S.W. 1.*
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- 1910 ‡ DE RHÉ-PHILIPPE, G. W. V., *Birkheads, Reigate, Surrey.*
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- 1924 ‡ RICHARDS, O. W., 70A, *Belsize Park-gardens, Hampstead, N.W. 3.*
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- 1923 ‡ VALENTINE, A., *Grand Hotel, Herne Bay, Kent*.
- 1922 ‡ VAN SOMEREN, V. G. L., C.M.Z.S., *Nairobi, Kenya Colony*.
- 1924 ‡ VAN STRAUBENZEE, Brig-Gen., C. H. Casimir, C.B., C.B.E., 3, *Sussex Mansions, Sussex-place, S.W. 7.*
- 1904 ‡ VAUGHAN, W.
- 1914 ‡ VEITCH, Robert, B.Sc., *Dept. of Agriculture, Brisbane, Australia*.
- 1909 VIDLER, Leopold A., *The Carmelite Stone House, Rye*.
- 1897 ‡ WAINWRIGHT, C. J. (COUNCIL, 1901, 1912-14), 172, *Hamstead-road, Handsworth, Birmingham*.
- 1918 WALFORD, L. J., *The Cavalry Club, Piccadilly, W.*
- 1878 ‡ WALKER, J. J.; M.A., R.N., F.L.S. (PRESIDENT, 1919-20; V.-PRES., 1916, 1921; SEC., 1899, 1905-1918; COUNCIL, 1894, 1921), *Aorangi, Lonsdale-road, Summertown, Oxford*.
- 1921 WALKER, S., 53, *Micklegate-hill, York*.
- 1920 WALLACE, William, M.B., 15, *Hainton-avenue, Grimsby*.
- 1921 WALLIS, H. H., M.A., *Rye Grammar School, Rye, Sussex*.
- 1919 ‡ WARD, J. Davis, *Limehurst, Grange-over-Sands, Lancs*.
- 1910 ‡ WARD, John J., *Natura, Woodland-avenue, Coventry*.
- 1908 ‡ WARREN, B. C. S., 14, *Avenue de l'Eglise Anglaise, Lausanne, Switzerland*.
- 1901 ‡ WATERHOUSE, G. A., B.Sc., B.E., *Allourie, Stanhope-road, Killara, New South Wales, Australia*.
- 1923 ‡ WATERS, Prof. E. G. R., M.A., 184, *Woodstock-road, Oxford*.
- 1914 ‡ WATERSTON, James, B.D., D.Sc. (COUNCIL, 1920-2), *British Museum (Natural History), S. Kensington, S.W. 7.*
- 1921 WATKINSON, The Rev. G., M.A., *Woodfield, Hipperholme, nr. Halifax*.

- 1919 ‡ WATSON, E. B., *The Entomological Branch, Dept. of Agriculture, Ottawa, Ont., Canada.*
- 1918 WATSON, J. H., 70, *Ashford-road, Withington, Manchester.*
- 1914 WATT, MORRIS N., M.B., Ch.B., *St. John's Hill, Wanganui, New Zealand.*
- 1923 WEST, Lieut.-Col. R. M., M.D., D.S.O., O.B.E., *Wootton Bridge, Isle of Wight.*
- 1906 ‡ WHEELER, The Rev. George, M.A., F.Z.S. (SECRETARY, 1911-21; V.-PRES., 1914; COUNCIL, 1921), *Ellesmere, Gratwicke-road, Worthing.*
- 1910 ‡ WHITE, E. Barton, M.R.C.S., *The Mental Hospital, Fishponds, Bristol.*
- 1918 WHITE, Ronald Senior, *Central Research Institute, Kasauli (Simla Hills), India.*
- 1923 ‡ WHITFIELD, F. G. S., *Wellcome Tropical Research Laboratories, Khartoum, Sudan.*
- 1913 ‡ WHITLEY, P. N., *Brantwood, Halifax; and New College, Oxford.*
- 1921 ‡ WHITNEY, W. B., B.Sc., A.M.Inst.C.E., *Glen Doone, Gerrard's Cross, Bucks.*
- 1913 † WHITTAKER, Oscar, F.R.M.S., *Box 248, Hollyburn, British Columbia.*
- 1911-1920, 1925 :
‡ WHITTINGHAM, Rt. Rev. A. G., Lord Bishop of St. Edmundsbury and Ipswich, *The Bishop's House, Ipswich.*
- 1917 ‡ WICKHAM, Rev. Prebendary A. P., *East Brent Vicarage, Highbridge, Somerset.*
- 1926 WIGGLESWORTH, Dr. V. B., *Dirleton House, Battlefield-road, St. Albans.*
- 1923 WIGHTMAN, A. J. C., *Aurago, W. Chiltington Common, Pulborough, Sussex.*
- 1896 ‡ WILEMAN, A. E., 37, *Queen's-gate Gardens, S.W. 7.*
- 1922 ‡ WILKINSON, Capt. D. S., *c/o Imperial Bureau of Entomology, Natural History Museum, Cromwell-road, S.W. 7.*
- 1923 WILKINSON, Harold, *P.O. Box 93, Kampala, Uganda.*
- 1911 ‡ WILLIAMS, C. B., M.A., 20, *Slatey-road, Birkenhead.* Trans. to:—*Research Institute, Amani, Tanga, Tanganyika Terr.*
- 1915 WILLIAMS, H. B., LL.D., *Littledene, Clairmont-lane, Esher, Surrey.*
- 1921 ‡ WILLMER, E. Nevill, *Trafford Hall, near Chester.*
- 1922 WILSON, F. E., 22, *Ferncroft-avenue, E. Malvern, Victoria, Australia.*
- 1921 ‡ WILSON, H. I., O.B.E., M.A., F.Z.S., 139, *Bishop's Mansions, Fulham, S.W. 6.*
- 1919 † WILSON, Lt.-Col. R. S., *Army and Navy Club, Pall Mall, S.W.*
- 1925 WINCKWORTH, R., 37, *Upper Rock Gardens, Brighton.*
- 1915 WINN, A. F., 32, *Springfield-avenue, Westmount, Montreal, Canada.*
- 1923 ‡ WINSTANLEY, E. J., L.D.S., R.C.S., 32, *Belsize-grove, Haverstock Hill, N.W. 3.*
- 1926 WOMERSLEY, H., *Sunny Meads, West Town, nr. Bristol.*
- 1919 ‡ WOOD, H. Worsley, 37, *De Freville-avenue, Cambridge.*
- 1927 WOOD, R. C., *Magombwa Estate, P.O. Cholo, Nyasaland.*
- 1905 WOODBRIDGE, F. C., *Briar Close, Latchmore-avenue, Gerrard's Cross S.O., Bucks.*
- 1925 WOODCOCK, A. J. A., M.Sc., *Clifton Manor, York.*
- 1914 ‡ WOODFORDE, F. C., B.A., *c/o Hope Department, University Museum, Oxford.*

- 1925 ‡ WOODWARD, Commander G. C., *Training Ship "Cornwall," Purfleet, Essex.*
- 1921 WOOLETT, G. F. C., *Sipilang, Province Clarke, B.N. Borneo.*
- 1926 DE WORMS, C. G. M., *Milton Park, Egham, Surrey.*
- 1926 ‡ WORTHINGTON, E. B., *Caius College, Cambridge.*
- 1922 WRIGHT, A. E., *Burnleigh, Kent Bank-road, Grange-over-Sands.*
- 1927 ‡ WRIGHT, W. Rees, M.Sc., *Bryn Awel, Buckley, Chester.*
- 1926 WYATT, C. W. ffordde, 14, *Cavendish-square, W. 1.*
- 1925 ‡ EL ZOHEIRY, M. Soliman, *Entomological Sec., Ministry of Agriculture, Cairo, Egypt.*

ADDITIONS TO THE LIBRARY

DURING THE YEAR 1927.

- ARNOLD (G.). The *Sphegidae* of South Africa. Part VIII.
[Ann. Transvaal Museum, Vol. XII, Part II, 1927.] *The Author.*
- BANG-HAAS (O.). Novitates Macrolepidopterologicae. Pt. I. Dresden: Blasewitz, 1927.
Purchased.
- BISCHOFF (H.), Dr. Biologie der Hymenopteren eine Naturgeschichte du Hautflügler. Berlin, 1927.
H. J. Turner.
- BLATCHLEY (W. S.). The Heteroptera of Eastern North America. Indianapolis, 1926.
By Exchange.
- BOX (H. E.). Notas sobre dos Insectos prejudicales a las matas de cafe en Venezuela. Caracas, 1927.
The Author.
- BUXTON (P. A.). Researches in Polynesia and Melanesia. Parts I-IV (relating chiefly to Medical Entomology). London, July 1927.
The Author.
- CHENU (Dr.). Encyclopédie d'Hist. Naturelle Coleoptères. 2nd Part, and Tables Générales. Paris, 1860.
By Exchange.
- COMSTOCK (J. A.). Butterflies of California. Los Angeles, Calif., U.S.A., 1927. *Purchased.*
- CRAWFORD (D. L.). *Psyllidae* (Chermidae). In Insects of Samoa. Part II, Fasc. I.
[Brit. Museum, Nat. Hist., 1927.] *The Author.*
- DALLAS (E. D.). Ensayo de una clasificacion de los Coleopteros anormales. Buenos Aires, 1923.
Imperial Bureau of Entomology.
- DONISTHORPE (H.). British Ants. Their Life-History and Classification. 2nd Edn. Revised and enlarged. London, 1927.
The Author.
- The Guests of British Ants. Their habits and Life-Histories. London, 1927.
The Author.
- FINOT (A.). Insectes Orthoptères. Faune de la France. Paris, 1890. *Purchased.*
- FRASER (F. C.). Odonata. In Insects of Samoa. Part VII, Fasc. I.
[Brit. Museum, Nat. Hist., 1927.] *The Trustees.*
- GABRIEL (A. G.). Catalogue of the Type Specimens of Lepidoptera Rhopalocera in the British Museum. Part III. Nymphalidae. London, 1927. *The Trustees.*
- GEBIEN (V. H.). *Tenebrionidae* (Col.). Der Schwed. Zool. Exped. dem Dem. Kilmandjaro, etc., 1905-6. Stockholm, 1910.
- Die Tenebrioniden (Col.) des Indo-Malayischen Gebietes, unter Berücksichtigung der Benachbarten Faunen. Parts VI, VII, VIII. Manila, 1925. *H. E. Andrewes.*
- GELIN (H.) et LUCAS (D.). Catalogue des Lepidoptères observés dans l'ouest de la France. 1st Partie: Macrolépidoptères. 2nd Partie: Microlépidoptères. 1912.
Purchased.
- GRAHAM-SMITH (G. S.). Flies in Relation to Disease. Non-Bloodsucking Flies. Cambridge, 1913. *Purchased.*
- GRIFFINI (Dr. A.). Studi sui *Lucanidi*. 1. Considerazioni generali sulla grande variazione di caratteri nei maschi dei *Lucanidi*. Torino, 1905. *H. E. Andrewes.*
- HARRIS (M.). The Aurelian, or Natural History of English Insects. Robson's Edn., 1778.
G. B. C. Leman.
- HEWITT (C. GORDON). The House Fly, *Musca domestica*, Linn. A Study of its Structure, Development, Bionomics and Economy. Manchester, 1910. *Purchased.*
- HILL (G. F.). Isoptera. Fam. Termitidae. In Insects of Samoa. Part VII, Fasc. I.
[Brit. Museum, Nat. Hist., 1927.] *The Trustees.*
- HOPKINS (G. H. E.). Butterflies of Samoa and some neighbouring Island-Groups. In Insects of Samoa. Part III, Fasc. I.
[Brit. Museum, Nat. Hist., 1927.] *The Trustees.*

- LAING (F.). *Coccidae, Aphididae and Aleocharidae*. In *Insects of Samoa*. Part II, Fasc. I. [Brit. Museum, Nat. Hist., 1927.] *The Trustees.*
- LAMEERE (A.). *Abrégé de la Classification Zoologique*. Bruxelles, 1927. *The Author.*
- . *Précis de Zoologie*. I. Intro. : La Cellule, L'espèce. Brussels, 1927. *The Author.*
- LANCASHIRE and CHESHIRE. *Fauna Committee Reports*. 12 Parts, 1914–25. Manchester. *W. J. Lucas.*
- LETZNER (K.). Bericht über die Tätigkeit der Entomologischen Section. Jahre 1882 und 1887. Breslau. *Imperial Bureau of Entomology.*
- LINDNER (E.). *Die Fliegen*. Parts 1–23. Stuttgart, 1926–7. *Purchased.*
- LUNDBECK (W.). *Diptera Danica*. Part VII : *Platypezidae, Tachinidae*. Copenhagen, 1927. *Purchased.*
- MACE (H.). *Modern Bee-Keeping*. Harlow, Essex, 1927. *The Author.*
- MEYRICK (E.). *Micro-Lepidoptera*. In *Insects of Samoa*. Part III, Fasc. II. [Brit. Museum, Nat. Hist., 1927.] *The Trustees.*
- MUIR (F.). *Fulgoroidea*. In *Insects of Samoa*. Part II, Fasc. I. [Brit. Museum, Nat. Hist., 1927.] *The Trustees.*
- NATURALISTS' DIRECTORY. Salem, Mass., U.S.A., 1927. *Purchased.*
- NEWSTEAD (R.). Preliminary Report on the Habits, Life-Cycle and Breeding Places of the Common House-Fly (*Musca domestica*, Linn.) as observed in the City of Liverpool, with suggestions as to the best means of checking its increase. Liverpool, 1907. *The Author.*
- POMONA COLLEGE. *Journal of Entomology and Zoology*. Vols. I–VIII. Pomona, 1909–16. Pomona, Calif., U.S.A. *By Exchange.*
- REBEL (H.). Fr. Berge's Schmetterlingsbuch. Vol. I, Text. Vol. II, Plates. Stuttgart, 1910. *Purchased.*
- SAMOA, INSECTS OF. MAPS. Part II, Fasc. I. Hemiptera. Part III, Fasc. I and II. Lepidoptera. Part VII, Fasc. I. Other Orders. (See Authors' Cat.) [Brit. Museum, Nat. Hist., 1927.] *The Trustees.*
- SCHRÖDER (Dr. C.). *Handbuch der Entomologie*. Parts 1–35. Jena, 1926–7. *Purchased.*
- SENIOR-WHITE (R.). *Catalogue of Indian Insects*. Part 12. *Tabanidae*. Calcutta, 1927. *Govt. of India.*
- UVAROV (B. P.). *Acrididae of Central Asia*. Tashkent, 1927. *The Author.*
- WOOD (T.). *Practical Lessons on Insect Life*. London, 1882. *Imperial Bureau of Entomology.*

ADDITIONS TO THE LIST OF PERIODICALS

- ENTOMOLOGICA AMERICANA.
- PROCEEDINGS OF THE ENTOMOLOGICAL SOCIETY OF BRITISH COLUMBIA.
- BULLETIN DU MUSEUM NATIONAL D'HISTOIRE NATURELLE. (Entomological portions.)
- MISCELLANEA ENTOMOLOGICA. (France.)
- INSECTA MATSUMURANA. (Japan.)

SEPARATES FROM PUBLICATIONS AND JOURNALS NOT RECEIVED IN THE LIBRARY

- ABOT (G.). Note sur *Le Lasiocoris anomalus*, Kol. [Bull. de la Soc. d'Études Scientifiques d'Angers, 1904.] *Mme. Valotaire-Abot.*
- . Note sur le *Coptosoma scutellatum*, Fourcr. [Bull. de la Soc. d'Études Scientifiques d'Angers, 1904.] *Mme. Valotaire-Abot.*
- . Note sur deux Insectes rares pour la Faune de l'Anjou. [Bull. de la Soc. d'Études Scientifiques d'Angers, 1907.] *Mme. Valotaire-Abot.*
- ALEXANDER (C. P.). The crane-flies (*Tipulidae*) of New England : Second Suppl. List. [Occas. Pprs. of Boston Soc. Nat. Hist., Vol. 5, pp. 223–31, Jan. 1927.] *The Author.*
- ATKINSON (D. J.). *Hoplocerambyx spinicornis*—an important Pest of Sal. [Forest Bull. No. 70 (Entom. series) Govt. of India Publ., Calcutta, 1927.]

- BACK (E. A.). The Cadelle.
[U.S. Dept. Agric., Bull. No. 1428.] Washington, D.C., Oct. 1926.] *U.S. Dept. Agric.*
- BAKER (C. F.). *Braconidae-Cheloninae* of the Philippines, Malaya, and Australia. I. Chelonini (except *Chelonus*).
[Philippine Jour. Sci., Vol. 31, No. 4, Manila, Dec. 1926.] *E. A. Elliott.*
- Some Philippine and Malaysian *Machaerotidae* (*Cercopioidea*).
[Philippine Jour. Sci., Vol. 32, No. 4, April, 1927.] *E. A. Elliott.*
- BARRAUD (P. J.). A Revision of the Culicine Mosquitoes of India. Part XVIII.
[Ind. Jour. Med. Resch., Vol. XIV, No. 2, Calcutta, Oct. 1926.] *The Author.*
- A Revision of the Culicine Mosquitoes of India. Parts XIX-XXII. (2 copies.)
[Indian Jour. Med. Resch., Vol. XIV, 1927.] *The Author.*
- BISHOPP (F. C.). The Horse Bots and their Control.
[U.S. Dept. Agric., Farmers' Bull., 1503, Sept. 1926.] *U.S. Dept. Agric.*
- BLAKE (I. H.). A comparison of the animal communities of Coniferous and Deciduous Forests.
[Illinois Biol. Mono., Vol. X, No. 4, Oct. 1926.] *Univ. of Illinois.*
- BURGESS (A. F.). The Satin Moth, a recently introduced Pest.
[U.S. Dept. Agric., Bull. No. 1469.] Washington, D.C., 1927. *U.S. Dept. Agric.*
- BUXTON (P. A.). The Radiation Integrator in Vacuo, an instrument for the study of radiant heat received from the sun.
[Jour. of Hygiene, Vol. XXV, No. 3, Sept. 1926.] *The Author.*
- BYERS (C. F.). An annotated List of the Odonata of Michigan.
[Occas. Pprs. Museum of Zool., Univ. Michigan, No. 183, March 4, 1927.] *Univ. of Michigan.*
- CAFREY (D. J.) and WORTHLEY (L. H.). A progress Report on the Investigations of the European Corn Borer.
[U.S. Dept. Agric., Dept. Bull. No. 1476.] Washington, D.C., Feb. 1927. *U.S. Dept. Agric.*
- CAMERON (M.). On the *Staphylinidae* collected by Mr. A. M. Lea in Fiji and New Caledonia.
[Rec. S. Aus. Museum, Vol. 3, No. 3, June 30, 1927.] *The Author.*
- Descriptions of new species of *Staphylinidae* (Col.) in the Zoologische Staatsinstitut und Zoologische Museum, Hamburg.
[Mitt. Zool. Staats. und Zool. Museum, Hamburg, Bd. 43, 1927.] *The Author.*
- CILENTO (R. W.). Malaria. With especial reference to Australia and its Dependencies.
[Comm. of Australia, Dept. of Health, Serv. Publ. (Trop. Divn.), No. 3.]
- Filariasis. With especial reference to Australia and its Dependencies. A Review and Compilation.
[Comm. of Australia, Dept. of Health, Serv. Publ. (Trop. Divn.), No. 4.]
- CLAUSEN (C. P.). The parasites of *Popillia japonica* in Japan and Chosen (Korea), and their introduction into the United States.
[U.S. Dept. Agric., Bull. No. 1429.] Washington, 1927. *U.S. Nat. Mus.*
- The Citrus Insects of Japan.
[U.S. Dept. Agric., Tech. Bull. 15, Oct. 1927.] *U.S. Dept. Agric.*
- COCKERELL (T. D. A.). New Light on the Giant Fossil May-flies of Mongolia.
[Amer. Mus. Novit., No. 244, Jan. 1927.] *The Author.*
- A journey in South America.
[Nat. Hist., Vol. 27, No. 1, 1927, pp. 77-92.] New York, U.S.A. *The Author.*
- COOLING (L. E.). The Larval Stages and Biology of the Commoner Species of Australian Mosquitoes.
[Comm. of Australia, Dept. of Health, Serv. Publ. (Trop. Divn.), No. 8.]
- Seven Common Species of Mosquitoes described for purposes of Identification.
[Comm. of Australia, Dept. of Health, Serv. Publ. (Trop. Divn.) No. 1.]
- CURRAN (C. H.). New Diptera from the Belgian Congo.
[Amer. Mus. Novit., No. 246, Jan. 1927.] *The Author.*
- Synopsis of males of the genus *Platycheirus*, St. Fargeau and Serville, with descriptions of new Syrphinae (Diptera).
[Amer. Mus. Novit., No. 247, Jan. 1927.] *The Author.*
- New West Indian *Tachinidae*. [Amer. Mus. Novit., No. 260, March 1927.] *The Author.*
- New African *Tachinidae*.
[Amer. Mus. Novit., No. 258, March 1927.] *The Author.*

- CURRAN (C. H.). New Neotropical and Oriental Diptera in the American Museum of Natural History.
[Amer. Mus. Novit., No. 245.] Jan. 1927. *The Author.*
- Undescribed *Tachinidae* and *Calliphoridae* from the Belgian Congo.
[Amer. Mus. Novit., No. 248, Feb. 1927.] *The Author.*
- Synopsis of the Canadian *Stratiomyidae* (Diptera).
[Trans. Roy. Soc. Canada, Sec. V, 1927, pp. 191-228.] *The Author.*
- Undescribed *Asilidae* from the Belgian Congo.
[Amer. Mus. Novit., No. 272, July 2, 1927.] *The Author.*
- CUSHMAN (R. A.). New species and new forms of *Ichneumonidae* parasitic upon the Gipsy-moth parasite, *Apanteles melanoscelus* (Ratzeburg).
[Jour. Agric. Resch., Vol. 34, No. 5, March 1, 1927.]
- DAVIES (W. M.). On the Tracheal System of Collembola, with special reference to that of *Sminthurus viridis*, Lubbock.
[Quarterly Jour. Micros. Sci., Vol. 71. Part 1, May 1927, pp. 15-30.] *Dr. A. D. Imms.*
- VAN-DYKE (E. C.). The Coleoptera collected by the Katmai Expeditions.
[Coll. Tech. Papers, Nat. Geog. Soc., II. 1.] Washington, 1924. *H. E. Andrewes.*
- ELLIOTT (E. A.). New Stephanidae from Borneo and the Philippine Islands, II.
[Philippine Jour. Sci., Vol. 33, No. 2, June 1927.] *The Author.*
- FELT (E. P.). New Gall Midges from New England.
[Occas. Pprs. of the Boston Soc. Nat. Hist., Vol. 5, pp. 207-8, June 1926.] *The Author.*
- FERRIS (G. F.). Report upon a Collection of Coccidae from Lower California.
[Stanford Univ. Publs. Biol. Sciences, Vol. 1, No. 2.] California, 1921. *T. D. A. Cockerell.*
- FIELDING (J. W.). Australasian Ticks.
[Comm. of Australia, Dept. of Health, Serv. Publ. (Trop. Divn.), No. 9.] *Commonwealth of Australia.*
- FILIPJEV (N.). Injurious insects and other animals in U.S.S.R. in the years 1921-4 (in Russian).
No. 2. Acridiidea.
[Bureau of Appld. Ent., 1926, Vol. XIII.] Leningrad. *The Author.*
- Injurious insects and other animals in U.S.S.R. in the years 1921-4 (in Russian).
No. 1. Genl. Intro.
[Bureau of Appld. Ent., 1926, Vol. XIII.] Leningrad. *The Author.*
- FLETCHER (T. B.) and SEN (S. K.). A Veterinary Entomology for India.
[Jour. Central Bureau for Animal Husbandry and Dairying in India, Vol. I, Parts I and II, April and July, 1927.] *The Authors.*
- FRYER (J. C. F.). The control of Horticultural Pests—a retrospect.
[Essex County Farmers' Union Year Book, Feb. 1927.] *The Author.*
- GAHAN (A. B.). Four new Chalcidoid Parasites of the Pine Tip Moth, *Rhyacionia frustrana* (Comstock).
[Jour. Agric. Resch., Vol. 34, No. 6.] Washington, D.C., March 15, 1927. *U.S. Dept. Agric.*
- GIBSON (G. W.). The Control of the Narcissus Eelworm.
[Jour. Mins. Agric., Sept. 1926.] *J. C. F. Fryer.*
- GIMMINGHAM (C. T.) and TATTERSFIELD (F.). Laboratory and Field Experiments on the use of 3:5-Dinitro-o-cresol and the Sodium salt for winter spraying.
[Jour. Agric. Sci., Vol. XVII, Part II.] *The Authors.*
- GLENDENNING (R.). The Cabbage Flea-beetle and its Control in British Columbia.
[Canad. Dept. Agric. Pamph., No. 80, new ser.] Ottawa, 1927.
- GODFREY (M. J.). The fertilization of *Ophrys speculum*, *O. lutea*, and *O. fusca*.
[Jour. of Botany, Feb. 1925.] *Professor Poulton.*
- GOURLAY (E. S.). Notes on the New Zealand Wood-wasp *Ophrynopus schauinslandi*, Ashmead.
[Trans. N.Z. Inst., Vol. 57 (1926), pp. 691-3.] *R. J. Tillyard.*
- GRAVELY (F. H.). Three Genera of Papuan Passalid Coleoptera.
[Mitt. Nat.-hist. Mus. XXX, 103.] Hamburg, 1913. *H. E. Andrewes.*
- A Catalogue of the *Lucanidae* in the Colln. of the Indian Museum.
[Rec. Ind. Mus., XI, Part VI, 407.] Calcutta, 1915. *H. E. Andrewes.*
- The Larvae and Pupae of some Beetles from Cochin.
[Rec. Ind. Mus. XI, Part V, 353.] Calcutta, 1915. *H. E. Andrewes.*
- Some Indian Spiders. Subfam. *Tetragnathinae*.
[Rec. Ind. Mus., XXII, Part IV, 423.] Calcutta, 1921. *H. E. Andrewes.*

- GROUVELLE (A.). Descriptions of five new Indian species of Clavicorn Col.
[Rec. Ind. Mus., VI, 5, No. 19.] Calcutta, 1911. *H. E. Andrewes.*
- Coleoptera, I. Zoological Results of the Abor Expedition, 1911-12.
[Rec. Ind. Mus., VIII, Part II, 100.] Calcutta, 1913. *H. E. Andrewes.*
- HAMPSON (G. F.). Butterflies of the Nilghiri District, S. India.
[Jour. As. Soc. Beng., LVII, 346 (1888).] Calcutta. *H. E. Andrewes.*
- HANITSCH (R.). On a collection of *Blattidae* from Southern Annam.
[Jour. Siam Soc., Nat. Hist. Supp., Vol. VII, No. 1, June 1927.]
Dr. G. A. K. Marshall.
- HATCH (M. H.). A List of Coleoptera from Charlevoix County, Michigan.
[Pprs. Michigan Acad. of Science, Acts and Letters, Vol. IV, 1924.] *The Author.*
- The Morphology of Gyrinidae.
[Pprs. Michigan Acad. of Science, Acts and Letters, Vol. VII, 1926.]
Imperial Bureau of Entomology.
- HEARLE (E.). The Mosquitoes of the Lower Fraser Valley, British Columbia, and their control.
[National Research Council, Rept. No. 17, Ottawa, 1926.]
Imperial Bureau of Entomology.
- HICKS (J. B.). Notes sur les Papillons du Transvaal Occidental (District de la Marico).
[Bull. Cercle Zool. Congolais, Vol. II, Fasc. 4, July-Aug. 1925.] *The Author.*
- HILL (G. F.). Notes on the Habits and Distribution of some North Australian *Culicidae*.
[Comm. of Australia, Dept. of Health, Serv. Publ. No. 21.]
- HINGSTON (R. W. G.). The Evolution of the Faculty of Communication in Ants.
[Rept. Proc. 5th Entom. Mtg., Pusa, 1923.] *The Author.*
- JAMES (H. C.). The Life-History and Bionomics of a British Phytophagous Chalcidoid of the genus *Harmolita* (Isosoma).
[Ann. Appl. Biol., Vol. XIV, No. 1, Feb. 1927.] *The Author.*
- KAYE (W. J.) and LAMONT (Sir NORMAN). A Catalogue of the Trinidad Lepidoptera Heterocera (Moths).
[Mem. Dept. Agric., Trinidad and Tobago, No. 3.] Trinidad, 1927. *The Authors.*
- LEEFMANS (S.). *Locustidae* as coconut pests in the Netherland-Indies and their parasites. (In Dutch: summary in English.)
[Med. van het Inst. voor Plantenziekten, No. 72, Landsdrukkerij, 1927.]
- MACE (H. and E.). *Huber*. Being a Review of: New Observations upon Bees, by Francis Huber. A new translation from the French by C. P. Dadant, Editor of the American Bee Journal.
[Hamilton, Illinois: American Bee Journal, 1926. From Science Progress, No. 84, April 1927.] *The Authors.*
- MCDUNNOUGH (J.). Contribution toward a knowledge of our Canadian Plume Moths (Lepidoptera).
[Trans. Roy. Soc. Canada, Sec. V, 1927, pp. 175-88, Parts 1 and 2.] *The Author.*
- MCINDOO (N. E.). Senses of the Cotton Boll Weevil—an attempt to explain how plants attract insects by smell.
[Jour. Agric. Resch., Vol. 33, No. 12.] Washington, Dec. 1926. *U.S. Dept. Agric.*
- MAIN (H.). Notes on *Methoca Ichneumonoides*, Latr.
[Essex Naturalist, 22, pp. 1-5.] *The Author.*
- MANSOUR (K.). The development of the larval and adult mid-gut of *Calandra oryzae*, Linn. The Rice Weevil.
[Quart. Jour. Micros. Sci., Vol. 71, Part II, Aug. 1927, pp. 313-52, pls. 29-33.]
The Author.
- MORGAN (A. C.). The Tobacco Budworm and its Control in the Georgia and Florida Tobacco-growing region.
[U.S. Dept. Agric., Farmers' Bull. No. 1531.] *U.S. Dept. Agric.*
- MORLAND (D.). On the microscopic examination of Bees for Acari.
[Ann. Appl. Biol., Vol. XIII, No. 4, Nov. 1926.] *Dr. A. D. Imms.*
- MUESEBECK (C. F. W.). New Species of Chalcid Flies parasitic on the Gipsy-moth parasite *Apanteles melanoscelus* (Ratzeburg).
[Jour. Agric. Resch., Vol. 34, No. 4.] Washington, Feb. 15, 1927.
- A study in Hyperparasitism, with particular reference to the parasites of *Apanteles melanoscelus* (Ratzeburg).
[U.S. Dept. Agric., Bull. No. 1487, April 1927.] *U.S. Dept. Agric.*

- MUNRO (J. W.). British Bark-Beetles.
[Forestry Com., Bull. No. 8.] London, 1926. *G. B. C. Leman.*
- NIJIMA (Y.) and KINOSHITA (E.). Die Untersuchungen über Japanische Melolonthiden III.
[Resch. Bull. Coll. Exper. Forest, Vol. IV, 1927.] Hokkaido Imp. Univ., Sapporo. *The Authors.*
- PATCH (E. M.). Two Currant Aphids that migrate to Willow-herbs.
[Maine Agric. Exp. Statn., Orono, Bull. No. 336, Jan. 1927.] *The Author.*
- The Pea Aphid in Maine.
[Maine Agric. Exp. Statn., Orono, Bull. No. 337, Feb. 1927.] *The Author.*
- PATTERSON (J. E.). The relation of Highway Slash to Infestations by the Western Pine Beetle
in Standing Timber.
[U.S. Dept. Agric., Tech. Bull. No. 3, June 1927.] *U.S. Dept. Agric.*
- PERINGUEY (L.). Descriptive Catalogue of the Coleoptera of South Africa. Fam. *Meloidae*.
[Trans. Roy. Soc. South Africa, Vol. I, Part I, July 1909.] *Imperial Bureau of Entomology.*
- PETERSON (A.) and HAEUSSLER (G. J.). The oriental Peach Moth.
[U.S. Dept. Agric., Dept. Circ. No. 395.] Washington, D.C., Oct. 1926. *U.S. Dept. Agric.*
- PORTER (C. E.). Notas Entomologicas.
[Rev. Ch. Hist. Nat. Aus., XXX (1926).] *Imperial Bureau of Entomology.*
- PHILLIPS (W. J.). *Eurytoma parva* (Girault) Phillips, and its biology, as a parasite of the Wheat
Jointworm, *Harmolita tritici* (Fitch).
[Jour. Agric. Resch., Vol. 34, No. 8.] Washington, D.C., April 1927.
- POULTON (E. B.). On Mimicry.
[Jr. Victoria Ins., XXII (1888).] *H. E. Andrewes.*
- RAMBOUSEK (F.). Die Rübenschädlinge im Jahre 1926.
Zeit. für die Zuckerindustrie der ösl Republik, Jahrg. 51 (VIII), 1926-7. Heft 30
and 31.] *The Author.*
- Über Rübenschädlinge im Jahre 1925.
[Zeit. für die Zuckerindustrie der ösl Republik, Jahrg. 50 (VII), 1925-6. Heft 43, 44,
45-46.] *The Author.*
- RYE (B. G.). Note on the Varieties of the Brit. *Coccinellidae*.
[Trans. Leicester Lit. and Phil. Soc.] *H. E. Andrewes.*
- SĂVULESCU (Dr. Tr.) and RAYSS (Dr. T.). Materiale pentru Flora Basarabiei Partea II-a.
[Supp. Bulet. Agric. Vol. III, 1926.] Bucharest, 1926. *Mr. P. P. Graves.*
- SCHARFF (J. W.). An experiment with Paris Green as an *Anopheles ludlowi* larvicide.
[Malay. Med. Jour., Vol. I, No. 4, Dec. 1926.] *The Author.*
- SICARD (Dr. A.). Notes sur quelques Coccinellides de l'Inde et de Birmanie.
[Ann. Soc. ent. Fr., 1912, LXXXI, 495.] 1912, Paris. *H. E. Andrewes.*
- SIMMONS (P.). The Cheese skipper as a Pest in Cured Meats.
[U.S. Dept. Agric., Bull. No. 1453.] Washington, Jan. 1927. *U.S. Dept. Agric.*
- SJÖSTEDT (Y.). Termiten aus dem Somaliland.
[Rev. Zool. Africaine, XV, fasc. 1, 1927.] *Imperial Bureau of Entomology.*
- SNAPP (O. I.) and others. Experiments on the control of the Plum *Curculio*, Brown rot, and
scab, attacking the peach in Georgia.
[U.S. Dept. Agric., Bull. No. 1482.] Washington, D.C., 1927.
- SNYDER (T. E.). Defects in Timber caused by Insects.
[U.S. Dept. Agric., Bull. No. 1490, July 1927.] *U.S. Dept. Agric.*
- SPAETH (F.). Die Gattung *Prioptera*, Hope (Col. *Cassididae*).
[Phil. Jr. Sci., XXVIII, 379 (1925).] Manila. *H. E. Andrewes.*
- Neue *Hoplionota*-arten (Col. *Chrysomelidae*, *Cassidinae*) aus dem Philippinen, II.
[Phil. Jr. Sci., XXVIII, 577 (1925).] Manila. *H. E. Andrewes.*
- Philippine and Bornean Species of *Hoplionota* (Col.).
[Phil. Jr. Sci., XXVIII, 721 (1925).] Manila. *H. E. Andrewes.*
- Neue *Hoplionota*-arten aus dem Congo-staate.
[Rev. Zool. Africaine, II, fasc. 3 (1913).] Bruxelles. *H. E. Andrewes.*
- Neue Cassiden aus dem Belgischen Congo.
[Rev. Zool. Africaine, II, fasc. 1 (1912).] Bruxelles. *H. E. Andrewes.*

- STRAND (E.). Liste des Rhopalocères et Grypocères Exotiques décrits dans mes travaux Jusqu'en 1926.
[Bull. Soc. Zool. de France, Tome LI, No. 5.] Paris, 1926. *The Author.*
- Catalogue des Arachnides que j'ai décrits jusqu'à l'année 1926. Animaux divers hommes jusqu'en 1926 dans les travaux de M. E. Strand.
[Archiv für Naturgeschichte, 1925, Abt. A, Heft 8.] Berlin, April 1927. *The Author.*
- A series of "Reviews" (Rozenzionen) of Entomological Works. *The Author.*
- Descriptions of New Species, Genera, etc., in Lepidoptera, Hymenoptera, Coleoptera, etc. *The Author.*
- "Der Schmetterlingschiesser" ist ein Fabeltier!
[Wien. Ent. Zeit., XLI, Beilage.] 1924, Wien. *The Author.*
- Striphnopteryidae aus Deutsch Ostafrika gesammelt von Herrn Dr. Reuss.
[Rev. Zool. Africaine, I.] Bruxelles, 1911. *The Author.*
- Ueber vier neue oder wenig bekannte afrikanische *Nomia*-Arten.
[Ent. Rund., XXIX, 104.] Stuttgart. *The Author.*
- Über zwei Rhopaloceren aus Kongo.
[Rev. Zool. Africaine, II.] Bruxelles, 1913. *The Author.*
- Notes sur Quelques *Apidae* du Congo Belge.
[Rev. Zool. Africaine, VIII.] Bruxelles, 1920. *The Author.*
- Insectes recueillis au Congo Voyage de Prince Albert de Belgique. Lep. Heterocera.
[Rev. Zool. Africaine, II.] Bruxelles, 1912. *The Author.*
- *Apidae*.
[Wissenschaftliche Ergebnisse der deutschen Zentral-Afrika Expedition, 1902-8, unter Führung Adolf F. Herzogs zu Mecklinburg, II, 135-66.] 1910. *The Author.*
- Über einige Schmetterlinge aus Kibwezi in Brit. Ost-Afrika, etc.
[Arch. Naturg., LXXV, 1, Heft 3, 1909.] Berlin. *The Author.*
- Westafrikanische Lepidoptera der Familien *Danaidae*, *Satyridae*, etc., etc.
[Arch. Naturg., 1911, I, 4, supp.] Berlin. *The Author.*
- H. Sauter's Formosa-Ausbeute: *Epiplemidæ* und teilweise *Noctuidæ*, etc.
[Arch. Naturg., 1916, A. 1, p. 137.] Berlin. *The Author.*
- Übersicht der in Gistel's "Achthundert und zwanzig neue oder unbeschriebene wirbellose Thiere" (1857), behandelten Insekten.
[Arch. Naturg., 1916, A. 5, p. 75.] Berlin. *The Author.*
- Miscellanea Lepidopterologica et Arachnologica, I-VI.
[Arch. Naturg., LXXXVIII, Ab. A, Heft 8.] Berlin, 1922. *The Author.*
- Miscellanea Hymenopterologica.
[Arch. Naturg., A. 3.] Berlin, 1922. *The Author.*
- Neue Beiträge zur Arthropoden-Fauna Norwegens. VII, IX, X, XVIII, XIX, XX, XXII-XXVI.
[Nyt Mag. f. Naturk.] Christiania, 1912-18. *The Author.*
- Kritische Bemerkungen zu dem Artikel. "Lepidopterologische Mittheilungen I."
[Nyt Mag. f. Naturvid., LIII, 269.] Christiania, 1915. *The Author.*
- Eine neue Ost-afrikanische Fulgoride.
[Ent. Rund., XXVIII, 86.] Frankfurt-a-M., 1911. *The Author.*
- Zwei neue exotische Grossschmetterlinge.
[Ent. Rund., XXVIII, 70.] Frankfurt-a-M., 1911. *The Author.*
- Eine neue riesenhafte Gelechiide aus Ecuador.
[Ent. Rund., XXVIII, 151.] *The Author.*
- Neue Grossschmetterlinge aus Abyssinien.
[Ent. Rund., XXVIII, 137.] *The Author.*
- Araneae. Spitzbergensis.
[Avifauna Spitzbergensis.] Bonn, 1911. *The Author.*
- Enumeration des Hétérocères exotiques qui jusqu'à l'année 1926 sont nommés et publiés, I.
[Entom. Nachrichtenblatt, Bd. I, Heft 2, May 1927.] *The Author.*
- TILLYARD (R. J.). A new species of spoon-winged Lacewing (Family *Nemopteridae*, Order, Neuroptera Planipenna) from Western Australia.
[Roy. Soc. W. Australia, Vol. XII, pp. 1-4.] *The Author.*

- TILLYARD (R. J.). On a Collection of Papuan Dragonflies (Odonata) made by the late Mr. Allan R. McCulloch in 1922-3, with descriptions of new species.
[Rec. Australian Museum, Vol. XV, No. 2, Nov. 1926.] *The Author.*
- The Rhaetic "Crane-Flies" from South America, not Diptera but Homoptera.
[Amer. Jour. Sci., Vol. XI, March 1926.] *The Author.*
- "The Progress of Economic Entomology (with special reference to Australia and New Zealand)." Trueman Wood Lecture, 1926.
[Jour. Roy. Soc. of Arts, Vol. 75 (1926), pp. 2-20.] *The Author.*
- Upper Permian Insects of New South Wales. Part II. The orders Mecoptera, Paramecoptera and Neuroptera.
[Proc. Linn. Soc. N.S. Wales, Vol. 51, Part 3, 1926.] *The Author.*
- TITSCHACK (E.). Beiträge zu einer Monographie der Kleidermotte *Tineola biselliella*.
[Zeit. für tech. Biologie, Bd. X, Heft ½. Leipzig, 1922.] *Purchased.*
- TRAGARDH (I.). Entomologiska analyser ar Torkande Träd. Entomological Analysis of Dying Trees.
[Medd. från Statens Skogsforsök, Heft 23, Nr. 3.] Stockholm, 1927.
- VIERECK (H. L.). The Philippine Species of *Parevaspis*: a genus of Bees.
[Phil. Jr. Sci., XXIV, 745.] Manila, 1924.
- A Preliminary Revision of some Charopsinae, a Sub-family of Ichneumonoidea, or Ichneumon-Flies, Part 2.
[Trans. Roy. Soc. Canada, Sec. V, 1926.]
- WICKHAM (H. F.). The Influence of the Mutations of the Pleistocene Lakes upon the present distribution of *Cicindela*.
[Am. Nat., XXXVIII, 643.] Boston, 1904. *H. E. Andrewes.*
- WIGGLESWORTH (V. B.). Digestion in the Cockroach. 1. The Hydrogen ion concentration in the Alimentary canal. 2. The digestion of Carbohydrates.
[The Biochemical Jour., Vol. 21, No. 4, 1927, pp. 791-6 and 797-811.] *The Author.*
- WILSON (G. Fox). The prevention of Insect attacks in Gardens.
[Jour. Roy. Hort. Soc., Vol. 52, Part 2, 1927, pp. 235-45.] *The Author.*
- Pollination in Orchards.
[Jour. Roy. Hort. Soc., Vol. 51, Part 2, 1926, pp. 225-51.] *The Author.*
- WORTHLEY (L. H.) and CAFFREY (D. J.). Spread and Infestation by the European Corn Borer during 1926.
[U.S. Dept. Agric., Misc. Circ. No. 104, Washington, April 1927.] *U.S. Dept. Agric.*

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1927.

Rev. F. D. MORICE (bequest) £200.

Prof. E. B. POULTON, F.R.S., authorised contribution from the Fund for promoting the study of organic and social evolution, presented to the University of Oxford by Professor J. Mark Baldwin, £40 16s.

The remarkable case of the experimental production of gynadromorphs dealt with by Prof. Poulton in his last Presidential Address to this Society is still fresh in our minds, and in an appendix to that Address Dr. Cockayne has recorded some of the conclusions arrived at by geneticists on the occurrence of gynandromorphs and intersexes, including those in the Dipterous genus *Drosophila*. I would here only call attention to the fact that Dr. Villeneuve in 1910 (*Wien. Ent. Zeit.* xxix, p. 80) suggested that the peculiar intersexual forms might be the result of parasitic castration, and Sturtevant in 1921 (*Genetics*, vi, p. 193) considered that in view of the influence of parasitisation on secondary sexual characters that has been demonstrated for *Andrena* (Hymenoptera) by Perez (*Act. Soc. Linn. Bordeaux*, xl, 1886, pp. 21-60) and for *Thelia* (Hemiptera) by Kornhauser (*Journ. Morphol.* xxxii, pp. 531-636) this suggestion must be considered.

In support of this theory we have Ashworth's account in *The Naturalist* for 1921 of the emergence of a nematoid worm from each of his four intersexual specimens of *Chironomus plumosus*.

Finally some of the described cases in Diptera appear to make it probable that the characteristics of a gynandromorph and an intersex may be combined in the same individual.

A *NIAVOIDES*, KHEIL, FEMALE OF *PAPILIO DARDANUS HODSONI*, POULT., WITH EXCEPTIONALLY LONG "TAILS," TAKEN IN S.W. ABYSSINIA BY ARNOLD HODSON, C.M.G.—Prof. POULTON exhibited a long-tailed female of the S.W. Abyssinian race of *P. dardanus*, Brown, captured 23 January, 1927, at the Haeto River (6900 ft.) by Mr. Hodson. With this were exhibited the tailed female described in *Proc. Ent. Soc. Lond.*, vol. i, p. 6, 1926, 3 tailed male-like females and one male—all from S.W. Abyssinia. The "tails" of the first-named female were much longer than the single remaining tail of the second, and than those of one male-like female, being about equal in length to those of the other two and the male, although far narrower and less spatulate.

Comparing this interesting new specimen C with the other two *niavoides* females taken by Mr. Hodson in S.W. Abyssinia—viz. A, mentioned in *Proc. Ent. Soc. Lond.* 1925, p. xlviii, and B, described in *Proc.*, 1926, p. 6—it was evident that A and C were very similar and that they differed considerably from B.

Fore-wing upper surface.—In C two white spots outside the upper outer angle of the cell, instead of one as in A and B. The cell-spot undivided, although the terminal section is slightly constricted off; in A wanting, in B separated. The submarginal spots in areas 2 and 3 much larger than those of B, similar in size to A, in which, however, the spot in area 2 is dim and indistinct.

Hind-wing upper surface.—The submarginal spots are much larger than those of B, A being intermediate. The black discal markings on a fuscous ground correspond with those of the male as in A and B. They are best seen by holding the specimen up to the light.

Under surface.—Apparently very similar to that of A. Female B differs in the much deeper although nevertheless pale ochreous tinge of the apical and outer marginal regions of F.W. and the H.W. beyond the cell. This tinge is present although paler in F.W. of A and C, doubtfully present in H.W. which has a greyish rather than a yellowish appearance. The basal half of the H.W. is a pale but

distinct yellow in B, white in the other two females. The line of demarcation between the pale basal and the darker outer section is much smoother and less indented in B, which resembles, in this respect, the ♀-f. *wienholti*, Poult. (*Proc.*, vol. ii, 1927, p. 10). In A and C this line is irregular, especially so in area 5 where the pale basal section is prolonged far into the darker peripheral region.

It is necessary to remark that female B, although it has lost one "tail" is otherwise a very perfect, unworn specimen, while C, although with both "tails" intact, is much worn, and A, which has lost both tails, far more so.

A NOTE ON THE MIGRATORY FLIGHT OF *LIBYTHEA LABDACA*, WESTW., IN NIGERIA.—Prof. POULTON said he had received a letter from Lieut. H. Beardmore, which, in the following passage, described the swarms of a butterfly evidently to be identified as *L. labdaca*. Confirmation was supplied by the presence of two specimens (exhibited to the meeting) in a small collection of butterflies sent by the writer. The note was an interesting addition to the observations recorded by the late C. O. Farquharson in *Trans. Ent. Soc. Lond.*, 1921, pp. 404, 405, and by other naturalists referred to on p. 404.

"7 September, 1927. Depot: Zaria: Nigeria.

"It may be of interest to you to know that at a place called Lafia on the Idah-Ankpa road in the month of May—about the first week—there were literally millions of a smallish brown butterfly, rather smaller than the 'Meadow Brown,' in all open spaces. Natives walking through the swarms of insects bent their heads as one bends the head to a heavy snowstorm at home. On any wet patch of ground the butterflies alighted in such numbers that not a sign of earth under them could be seen. One could put out a hand and catch two or three butterflies every time. When fishing one day I used them as bait on the hook, catching them as they alighted on my clothing."

FOUR GYNANDROMORPHS OF THE RARE BEE *NOMADA LATHBURIANA*, KIRB., PARASITIC ON THE BEE *ANDRENA CINERARIA*, L., TAKEN IN THREE VISITS TO A SINGLE COLONY OF THE LATTER IN DEVONSHIRE.—Prof. POULTON said that about six months ago he had received the following letter from his friend Dr. R. C. L. Perkins, D.Sc., F.R.S. :—

"20 April, 1927. Newton Abbot.

"It may interest you to know the following :—Some days ago my youngest son discovered a large colony of *Andrena cineraria* in a field near here, about a mile from our house. As I have never failed to examine colonies of this bee in the hope of finding its pretty parasite *Nomada lathburiana* in Devon, since only a single specimen was recorded by Parfitt about fifty years ago or more, I visited this field with him the next day and we at once found the *Nomada*. I have known a colony of the *Andrena* not many hundreds of yards from this one for nine or ten years, but it has produced no parasite; neither has another on the other side of my house (half a mile away), nor numerous other ones at Paignton and Brixham, nor those on high moorland in S. Devon. The colony now found did not exist in the field some years ago, as I frequently visited it for other bees at the right season! Now it occupies a huge space, I should say, 100 × 30 yards at least;

for I have not been all over the big field. In many places the burrows are numerous and thickly crowded. This is, however, by the way. The first day I caught a gynandrous *Nomada*, the second day (we were there an hour or two each day, but a good deal of time was wasted from lack of sunshine) I caught two more, and the third day, when I finished taking the *Nomada*, a fourth. Considering the large space covered by the bees, we can only have seen a very small fraction of those that existed, and only caught a small fraction of those seen, as they were extremely active, but the series taken contained 4 gynandromorphs, some of great interest! Except that I have heard a report that some collector had caught a dozen *hermaphrodite* common blue butterflies on one day and in one spot, I know nothing like my catch! None of the gynandromorph *Nomadas* are at all alike. It is certainly a remarkable catch for what is considered a rare bee—one which I have not seen alive before.” *

It was impossible to doubt that this remarkable record implied something common in the conditions or in the genetic constitution of the bees.

Prof. Poulton had replied to his friend that he was sure the observation would interest the Fellows of the Society, and at the same time offered to communicate a note if it would be inconvenient for Dr. Perkins himself to be present. He had received the following reply with the notes recorded below and the diagrams exhibited to the meeting.

“ 11 May, 1927.—I now send the descriptions of the four specimens, all of which are entirely different; also the rough diagrams of the heads of three.† The half ♂, half ♀ right eye of No. 3 is very striking. The fourth example has an entirely ♂ head, but the thorax is of mixed sex.

Specimen No. 1.

HEAD.

Right half.

Face ♂ colour.

Eye ♂.

Left half.

Face (*e.g.* labrum, clypeus) mostly ♀, but the cheek and mandible are ♂, and the red line along the inner orbit is largely suffused with yellow (♂).

Eye ♂.

* Dr. Perkins wrote a little later as follows:—“ I forgot to say that I handled 140–170 specimens of the *Nomada*—of course I handled many I did not kill, selecting in the end only special specimens.

On the first day 9 out of 10, and probably more, were male.

,, ,, second ,, 7 ,, ,, 10 were male.

,, ,, third ,, 5 ,, ,, 10 ,, ,,

The females were not yet fully out on the third day, but in fair numbers round the burrows of host. I should have seen many more males if I had kept away from the burrows and collected round bushes.”

Dr. Perkins also wrote on 7 October, 1927:—“ I have recently looked through most of the other examples of the *Nomada* I caught with those four gynandromorphs. Only one specimen was abnormal, one joint of each antenna being swollen and distorted. It is curious that this should have happened to the same joint of each appendage, but probably in the pupa these lay close together and were simultaneously injured in that stage.”

† A few weeks later Dr. Perkins sent coloured diagrams of the 6th abdominal tergite, and 5th and 6th sternites of specimen No. 1; also, at the same time, the four gynandromorphs exhibited, with the drawings, to the meeting.

Right half.

Antenna ♂, normal, 13-jointed.

Hairs less red, yellower-tinged, the tegula yellow.

(The clothing on the posterior parts of the thorax above is also yellower.)

Pleura and sternum clothed with pale yellowish hair, and with a large yellow spot in front.

Legs ♂.

Red band of basal segment largely suffused with yellow.

2nd segment with yellow band as in ordinary ♂, across the whole segment, not indented or subinterrupted with red in the middle, as in ♀.

Beneath (*i.e.* 2nd sternite) the segment has a large yellow spot reaching to the middle line.

3rd and 4th sternites mostly red-brown, only with a small yellow spot at extreme sides; therefore most like normal ♀.

6th tergite simple with broad yellow apical band.

5th sternite with usual apical yellow band to middle line.

6th sternite represented by half a ♂ segment (consequently asymmetric).

7th tergite like that of the ♂, but only about half the normal size, and occupying a middle position, extending beyond the ventral segments; within this tergite lay the sting and its sheaths, occupying the middle line.

No 7th or 8th ♂ ventral segments nor genital armature.

No trace of testes, or other ♂ glands or ducts.

Left half.

Antenna ♀ in colour and number of joints, but flagellar joints 2-5 are black-marked above—not wholly black above as on right side—and the ♂ tubercles of the joints are evident though smaller than normal.

THORAX.

Hairs red as in normal fresh ♀, tegula testaceous.

Pleura and sternum with red hair, a small red spot in front. (There is slight asymmetry of the outline of the meso-sternum owing to the difference between ♂ and ♀.)

Legs ♀.

ABDOMEN.

Only a little yellow at extreme side.

See opposite remark.

2nd sternite without yellow marking.

3rd and 4th sternites entirely red-brown, as in ordinary ♀.

6th tergite asymmetrical, on this side with half a reddish ♀ pygidial area and apical tuft of setae at side.

5th sternite with the same part red and with the tuft of curved setae characteristic of the genus in the ♀.

6th sternite largely membranous and with usual armature of spines apically.

Sting and its sheaths, etc., represented, but not fully developed, lying beneath and within the 7th (♂) tergite.

Well-developed ovaries, etc.

Specimen No. 2.

HEAD.

*Right half.**Left half.*

Clypeus, mandible and inner orbits red (♀).

Clypeus and a small spot above it yellow (♂), but the mandible and orbits are ♀.

Labrum nearly all yellow on this side (♂), but a little red (♀) is present.

Labrum yellow (♂).

For the rest, the head with the eyes, antennae, and clothing is ♀ in all respects, as is all the rest of the insect.

Specimen No. 3.

HEAD.

*Right half.**Left half.*

Face beneath the antennae with normal ♂ colour, but the mandible is ♀, labrum ♂.

Clypeus, labrum and mandible ♀, but side of face is bright yellow (♂) as on the right side.

Antenna ♂ normal.

Antenna ♂ in colour, 13-jointed and with the usual tubercles, but the 13th joint is abnormally short and appears less distinctly separated.

Eye greenish (♂) on the lower, brown on the upper half (♀).

Eye uniformly brown or reddish-brown (♀).

THORAX.

Hair yellower (less deeply red).

Hair red.

Scutellar yellow spot small.

Scutellar spot large.

Tegula largely yellow.

Tegula red.

Pleura and sterna pale-haired; mesosternum with large yellow spot in front.

Pleura and sterna red-haired; mesosternum with red spot in front.

Legs ♂, but not altogether normal.

Legs ♀.

The abdomen is almost normal ♀, but a slight asymmetry of the yellow band of tergite 2 is evident and its banding appears more like most males than females.

Specimen No. 4.

THORAX.

*Right half.**Left half.*

Tegula yellow.

Tegula red.

Mesosternum with yellow spot in front.

Mesosternum with red spot.

Legs ♂, perhaps not quite normal.

Legs ♀.

The clothing of the whole thorax is that of a ♀, the hair being very red, and it appears quite symmetrical in form, in spite of the great difference between the legs of either side.

The head is entirely male, the abdomen perfectly normal female.

SOME NORTH AMERICAN ASILIDAE; THEIR MODELS AND THEIR PREY RECORDED BY STANLEY W. BROMLEY.—Prof. POULTON said that he had received the following interesting tabular statement (p. 55) from his friend Mr. Bromley, and he felt sure that Fellows would be glad to compare these facts with the numerous records of ASILIDAE and their prey from other parts of the world, contained in the Society's publications. Mr. Bromley also wrote the following note:—

“Certain Asilids suggest other types of bees, but the resemblance is not as striking as in the above-mentioned. For instance *Atomosia puella*, Say., suggests a small bee of the *Halictus nymphaeorum* group, while *Mallophora clausicella*, *laphroides*, and *guildiana* suggest Megachilid bees.

“Certain species of *Deromyia* suggest *Polistes* or other wasps, but the mimicry is not specific to the point of recognition.

“Other species of *Dasyllis* suggest bumble-bees, but I know them only from dried specimens and would therefore hesitate to state what particular species are mimicked. A live specimen in the field may present an entirely different appearance from a dried specimen in a collection. To establish the existence of mimicry a specimen must therefore be studied in the field in its natural habitat, and comparisons made with the species of Hymenoptera in the particular region in which it occurs.”

In the letter which accompanied these notes Mr. Bromley drew attention to the following facts upon which further information was desired and might perhaps be obtained from our Fellows or their correspondents in Africa.

“6 September, 1927.—In studying a collection of ASILIDAE from the Belgian Congo, sent me by my kind friend Dr. Schouteden of Tervueren, Belgium, I found several species (two of them new) in the group of which *Laphria rufibarbis*, Fabr., may be taken as the type. Kertész places *rufibarbis* in *Hyperechia* and the relationship is undoubtedly very close. I believe, however, the species mentioned should constitute a new genus which would be intermediate between *Hyperechia* and *Andrenosoma*.

“However, the point that most interested me was the fact that all of these species (although structurally similar to *Hyperechia*) were more slender and longer-legged. Their colour pattern suggested certain wasps, and I was able—by comparison with Belgian Congo material in the American Museum—to identify several as accurate mimics of certain undetermined Psammocharid and Sphecid wasps in this collection. Judging from the dead specimens, they must—in life—as closely resemble these wasps as the true *Hyperechia* do Xylocopids. This raised the question in my mind—‘Do these flies feed on their models as *Hyperechia* sometimes does?’ Furthermore, is there any such close association that exists in the life-history of the two, as occurs in *Hyperechia*?”

THE HABITS AND PREY OF THREE ASILIDAE IN NEW ZEALAND RECORDED BY J. G. MYERS.—Prof. POULTON, in the absence of the author, communicated the following notes on New Zealand ASILIDAE which are of special interest in connection with the observations which have recently been recorded in the *Proceedings* of the Society:—

Neotamus varius, Walk.—Canterbury, foothills of Southern Alps, 20.xii.22: female flew into railway carriage which was going uphill. It bit me severely on

SOME NORTH AMERICAN MIMETIC ASILIDAE.

ASILID.	MODEL.	PREY.
<i>Laphria saffrana</i> , Fabr.	<i>Vespa carolina</i> , Drury (queen).	Only record—a Cetoniid beetle.
<i>Dasyllis thoracica</i> , Fabr.	<i>Bombus vagans</i> , Smith (queen) or <i>Bombus impatiens</i> , Harris (queen).	Of 11 records, 6 were Hymenoptera and 5 Coleoptera. 3 were honey-bee workers, 2 solitary bees, 1 Tenthredinid, 2 Rose-chafers, 2 <i>Aphodius fimetarius</i> , and 1 Chrysomelid.
<i>Dasyllis grossa</i> , Fabr.	<i>Bombus impatiens</i> , Harris (queen). Specimens from the southern parts of its range have more yellow on abdomen and suggest <i>Bombus americanorum</i> , Fabr. (queen).	9 records : 2 Hymenoptera (both bumble-bees), 5 Coleoptera, 1 Lepidopteron (♀ Gypsy moth?). This record questionable.* 1 Cicada (Champlain and Knull) <i>Ent. News</i> , xxxiv, July, 1923, p. 212.
<i>Dasyllis lata</i> , Macq.	<i>Bombus americanorum</i> , Fabr. (queen).	No records. Frison mentions bumble-bees as the prey of a large <i>Dasyllis</i> , and, as this is the large species in Illinois, it may have been the captor. (<i>Annals Ent. Soc. Am.</i> xix, No. 2, p. 231, June, 1926.)
<i>Ceraturgus cruciatus</i> , Say.	A Vespid queen. <i>Vespa communis</i> , De Sauss. or ,, <i>diabolica</i> , De Sauss.	14 records : 4 Hymenoptera (all winged ants), 9 Coleoptera, 1 Homopteron (Cercopid).
<i>Blepharepium annulatum</i> , Bigot.	<i>Polistes cubensis</i> or ,, <i>major</i> .	Only record—a worker honey-bee.
<i>Mallophora orcina</i> , Wied.	Worker <i>Bombus americanorum</i> , Fabr. (<i>pennsylvanicus</i>).	23 records—all Hymenoptera, 5 being bumble-bees. Observed feeding on Model (<i>B. pennsylvanicus</i>) by McAtee and Banks (<i>Proc. Ent. Soc. Wash.</i> Vol. 22, No. 2, Feb. 1920, p. 28).
<i>Mallophora bomboides</i> , Wied.	Queen <i>Bombus americanorum</i> , Fabr.	14 records—13 Hymenoptera, 1 Dipteron. 4 records of bumble-bees, 2 of mimic preying on model (queen <i>B. americanorum</i>).
,, <i>rex</i> , Bromley.	Queen <i>Bombus americanorum</i> , Fabr.	1 worker bumble-bee (<i>B. impatiens</i>).
,, <i>chrysomela</i> , Bromley.	Queen <i>Bombus americanorum</i> , Fabr.	No records.

* The Asilid specimen in the collection of the Mass. Agr. Exp. Sta. bore the data "Mosher—eating ♀." Mosher was connected with the gypsy moth work in Massachusetts and the ♀ probably referred to the gypsy moth, although this is, of course, not certain.

the thumb when I caught it. The pain lasted no longer than that of a prick with a needle. Whangarei, 4.i.22, this fly very abundant, capturing *Musca domestica* and *Lucilia sericata* (thus an indigenous insect preying on introduced forms).

Senoprosopis meridionalis, Hutton.—York Bay, Wellington. During the emergence in incredible swarms of the winged males of the Tipulid, *Hudsonia heterogama*, Huds., this fly was capturing large numbers. Also observed to catch the blowfly, *Anastellorhina stygia*, Fabr. (Both observations, Jan., 1924.)

Neoitamus smithi, Hutton.—In March 1923, S. and C. Lindsay, in a Canterbury river-bed, disturbed an example of the small Cicada, *Melampsalta hamiltoni*, Myers, which was snapped up by this Asilid before they could catch it. They then captured both fly and prey, of which the latter is remarkably larger than the former.

Wednesday, November 2nd, 1927.

Mr. J. E. COLLIN, President, in the Chair.

Obituary.

The PRESIDENT announced the death of Mr. D. PEARSON, Fellow of the Society.

Election of Fellows.

The following were elected Fellows of the Society :—J. H. BELL, Maiden Lodge, Caterham, Surrey; F. R. ELLASTON-WRIGHT, M.D., Braunton, N. Devon; F. G. HUCKLESBY, 5, Prince's Square, Bayswater, W.2; Capt. H. O. MORGAN, 18, Arlington Villas, Clifton, Bristol; R. W. PAINE, Asst. Entomologist, Dept. of Agriculture, Suva, Fiji; W. REES WRIGHT, M.Sc., London School of Hygiene and Tropical Medicine, Endsleigh Gardens, N.W.

Exhibits.

EVIDENCES OF *SYNANTHEDON FLAVIVENTRIS*, STAUD.—Mr. H. J. TURNER, on behalf of Mr. W. FASSNIDGE, exhibited a small growth of willow containing a larva of *Synanthedon flaviventris*, Staud. It was found with the withered portion containing the larva hanging loosely, but still attached. It subsequently got broken off. Another exactly similar on the same bush broke off as it was being cut. The exhibitor called attention to the green leaves on the living wood and the withered leaves on the detached portion. The height of the mine was about 5 feet above ground, but this is very little to go by. Mines have been found already pecked out by tits before they have become detached. The larva is in the withered portion of the stem, and presumably the fact of lying after becoming detached amongst the rough grass and undergrowth affords the stem the necessary moisture and precludes the attacks of birds.

COLOUR PRESERVATION OF DRAGONFLIES.—Dr. J. E. H. ROBERTS described and discussed methods of preserving colours in dragonflies.

INSECTS TAKEN AT SEA OFF THE BRAZILIAN COAST.—Mr. F. W. EDWARDS exhibited a number of insects taken on board ship on 12th Oct. 1926, off the Brazilian coast, and said: "On the 10th and 11th of October a strong northerly wind had

blown. In the evening of the 11th the wind moderated and blew for a short time directly off shore, then dropped entirely; a thunderstorm broke about midnight and lasted several hours. About 11 p.m. the third mate of the SS. *Highland Lock* noticed a number of moths flying round the front headlight, our position at this time being 20° 35' S. and 39° 50' W., that is to say 32 miles from the coast of Espiritu Santo. On coming on deck at 7.30 a.m. on the 12th we noticed several moths flying about and others were later found resting in sheltered positions. The whole morning and most of the afternoon were spent in searching the ship, and about 120 specimens representing nearly 60 species were captured, ranging in size from the huge *Otosema odorata*, Linn., to small Tineids. Most of the insects were moths, but a few others of various orders were found. Two Noctuids (*Eulepidotus* spp.) and one or two Phycitids were very common, but of the other species only a few examples were seen. Almost all were in perfect condition, though some were damaged by passengers who assisted in the chase. We saw no evidence that any more insects flew on board during the day; on the other hand, most of the smaller kinds were only seen in the early part of the morning, and we suspect that if we had commenced the search at dawn many more small species would have been found. It seems most probable that all of them reached the ship on the off-shore wind the previous evening. The following is a list of the species obtained. I am indebted to Mr. W. H. T. Tams for determining the Lepidoptera, and to Messrs. D. E. Kimmins and W. E. China for the names of the dragonfly and bug."

ODONATA.

One specimen of *Aeschna confusa*.

HETEROPTERA.

Several specimens of a large Pentatomid (*Alcaeorrhynchus grandis*, Dahl.).

HOMOPTERA.

One small specimen.

COLEOPTERA.

One specimen (Chrysomelid?).

DIPTERA :

Tipulidae : *Trimicra pilipes*, F. (1). Chironomidae : *Tanytarsus* sp.? (1).

Syrphidae : *Braziliana* sp. (1). Tachinidae : One. Anthomyiidae :

One. Muscidae : *Chrysomyia* sp. (1). Sepsidae : One.

LEPIDOPTERA :

Noctuidae : *Cirphis unipuncta*, Haw. (1); *Prodenia latifascia*, Walk. (4); *Laphygma frugiperda*, Sm. & Abb. (2); *Perigea apameoides*, Guen. (1); *P. concisa*, Walk. (1); *Paectes fuscescens*, Walk. (2); *P. lunodes*, Guen. (1); *Ophisma tropicalis*, Guen. (6); *Metria aperta*, Walk. (1); *Zale exhausta*, Guen. (3); *Z. terrosa*, Guen. (1); *Z. sexplagiata*, Walk. (1); *Z. lunata*, Drury (1); *Z. phaeograptia*, Hmps. (1); *Syngrapha egena*, Guen. (1); *Gerespa fasciolaris*, Hübn. (3); *Otosema odorata*, Linn. (3); *Blosyris hypnois*, Hübn. (1); *Concana mundissima*, Walk. (1); *Eulepidotus detracta*, Walk. (very numerous); *E. sp. nov. ?* (numerous); *E. coeruleilinea*, Walk. (3); *E. sp. nov.* (1); *E. juncida*, Guen.? (4); *E. mabis*, Guen. (very numerous);

Antiblemma sterope, Cram. (2); *Massala obvertens*, Walk. (4); *Orthogramma coppyi*, Guen. (1); *Characoma nilotica*, Rogenh. (1); *Syngrapha egena*, Guen. (1); *Mursa phtisialis*, Guen. (1).

Sphingidae: *Erinnyis oenotrus*, Cram. (1).

Geometridae: *Eupithecia* sp. nov. (1); *Deptalia truncaria*, Schaus (numerous); and one or two others which escaped.

Pyralidae: *Myelobia smerintha*, Hübn. (2); *Margaronia lustralis*, Guen. (1); *M. quadristigmalis*, Guen. (1); *Pilocrocis gastralis*, Guen. (1); *Crocitolomia palindialis*, Guen. (1); *Pococera atramentalis*, Led. (many); *Elasmopalpus lignosellus*, Zell. (3); *Zamagiria laidion*, Zell. (very numerous); *Hypargyria definitella*, Zell. (3).

Tortricidae: Three or four species, one or two of each.

Tineidae: One specimen, resembling an *Opostega*; seen but not caught.

THE SCENT-BRANDS OF MALE DANAINA BUTTERFLIES IN " PAPERS " ATTACKED BY PESTS.—Prof. POULTON exhibited six males of *Amauris echeria*, Stoll, and three males of *A. albimaculata*, Butl., collected in January and February, 1925, by Capt. C. R. S. Pitman in the Cherangani Hills (6200 ft.), 40 m. E. of Mt. Elgon, E. Trans-Nzoia, Kenya Colony. The box in which these and other papered butterflies from the same locality were kept had been attacked by unknown pests, and most of the papers contained debris. The only injury to the wings of the *Amauris* was inflicted upon the scent-brands, which, in five examples of *echeria* and two of *albimaculata*, had been eaten through on one or both sides. In some instances the whole of the brands had been removed, the perforation accurately preserving the outline of the structure. Injuries of this kind had been exhibited before (see *Proc. Ent. Soc. Lond.*, 1907, p. x), but never, he believed, on so large a scale. It was much to be hoped that Capt. Pitman would be able to capture the pest which has this preference for scent-brands, being probably attracted by the fat in the cells which secrete the odoriferous substance (Eltringham, in *Trans. Ent. Soc. Lond.*, 1913, p. 401). A letter recently received from Dr. E. E. Evans Pritchard spoke of the " little red ant " as a great nuisance to the collector of insects in the Bahr-el-Ghazal, and among the accompanying specimens was a male of *Amauris hecate*, Butl., with the brands similarly attacked. In this case, therefore, and perhaps in others, it was probable that ants were the pests concerned.

In an earlier collection made by Capt. Pitman in the same locality the proportions of the species were reversed, there being six male *albimaculata* to two male *echeria*. The basal patch of the hind-wing was considerably darker in the former species, perhaps the result of a synaposematic approach towards the very dark patch of *Amaurina ansorgei*, E.M.Sh., as suggested in *Proc. Ent. Soc. Lond.*, 1924, p. xxix. In this latter communication as well as in Dr. S. A. Neave's paper in the *Transactions* for 1906 (pp. 208–210 & pl. ix) the Uganda *Amauris* spoken of as *echeria* should have been named *oscarus*, Thureau. This authority, in the original description of *oscarus* (*Berlin Ent. Zeitschr.*, Vol. 48, p. 301, 1903), wrote of it as a race of *echeria*, but Dr. Jordan, after kindly examining the male armature, concluded that it was certainly distinct. Major C. A. Wiggins, C.M.G., during the past summer had examined many hundreds of specimens kindly collected by him in Uganda for the Hope Department, and among these had found not a single example of true *echeria*.

The close superficial resemblance between the patterns of *oscarus* and *echeria*, even when taken in widely separated localities, was well illustrated in Dr. Neave's pl. ix in the 1906 *Transactions*, where figs. 2b (♂) and 3b (♀), named *echeria jacksoni*, E.M.Sh., are *oscarus* from Entebbe, while figs. 6 (♂) and 7 (♀) are true *echeria* from Natal.

FORMS OF *DANAIDA CHRYSIPPUS*, L., COLLECTED BY MISS M. E. FOUNTAINE IN TENERIFE AND ON THE WEST COAST OF AFRICA.—Prof. POULTON said that in describing an interesting series of *chrysippus* collected in Fernando Po by his friend Mr. G. H. Bullock, he had suggested an inquiry into the geographical distribution of the two distinct tints—brownish orange and sienna brown—exhibited by this butterfly (*Proc. Ent. Soc. Lond.*, 1916, p. ix). When, therefore, Miss Fountaine had told him of her intended journey in 1925 and 1926 he had mentioned this investigation which she had kindly promised to remember. The following interesting series, of which examples from each locality were exhibited to the meeting, was the result.

(1) *Orotava, Tenerife* (November, 1925, to January, 1926).—7 ♂, 6 ♀, all of the brownish-orange form characteristic of the island. A tendency towards the *alcippus*, Cr., form was exhibited by 2 ♂ and 2 ♀ in the white borders to veins 2, 3, 4, and 5 of the hind-wing, and, among these, to the white suffusion in the inner part of areas 3 and 4 of 1 ♂ and 1 ♀, being especially well marked in the latter, but in both invading the tip of the cell. Twelve examples of *chrysippus*, labelled Tenerife in the Hope Collection, showed no greater development of the white scales than in Miss Fountaine's series. Of twelve specimens taken at Guimar by Mr. W. Walmesley White, on the other hand, all 6 ♂ and 3 ♀ have white-marked hind-wings, two males surpassing the whitest female from Orotava and one female nearly equalling the whitest male from this locality. The race of *chrysippus* in Palma is in marked contrast with that in Tenerife, being a form resembling *alcippus*, but with the white H.W. area somewhat reduced and a darker orange ground-colour. The race in the Cape Verde Islands was typical *alcippus*.

All the remaining examples of *chrysippus*, from the west coast of Africa, possessed the fully developed white hind-wing of typical *alcippus*, but differed in the tint of the coloured pigment in both wings.

(2) *Lagos, S. Nigeria* (January and February, 1926).—5 ♂, 5 ♀, of which all except one pair were light-coloured, the pigment being brownish orange replaced by sienna brown in the F.W. cell, in area 3 (commonly overspreading into the adjacent part of area 2), and the base of area 1a. A paler longitudinal streak is commonly seen in the lower half of the F.W. cell. The coloured pigment of the darker pair was sienna brown, uniform in the female but becoming, in the male, rather darker in the parts of the surface which are sienna brown in the light varieties.

(3) *Ibadan, S. Nigeria* (March, 1926).—1 ♂, 4 ♀, all light-coloured, as above, except 1 ♀—dark.

(4) *Oshogbo, S. Nigeria* (March and April, 1926).—12 ♂, 8 ♀, all light-coloured except 2 ♂—dark.

(5) *Ogbomosho, S. Nigeria* (March, 1926).—1 ♂, 1 ♀, both light-coloured.

(6) *Buea, Cameroons* (May and June, 1926).—5 ♂, 1 ♀, all dark (sienna brown),

2 ♂ being slightly transitional in their somewhat lighter shade and increased depth in the F.W. cell, etc.

Miss Fountaine's West Coast specimens, predominantly light-coloured in S. Nigeria, were therefore replaced by the dark forms at Buea in the Cameroons. The numerous Nigerian specimens in the Hope Department were also light-coloured, including a series of 7 ♂ and 7 ♀ bred in 1911 from the eggs of a light female, by my friend Mr. W. A. Lamborn, at Oni, 70 miles E. of Lagos. Westward along the coast dark forms appear—from the Wassaw District of the Gold Coast 1 ♂, 2 ♀ dark; 1 ♀ light: from Cape Coast Castle 1 ♂, 2 ♀ dark; 1 ♀ intermediate: from Cape Palmas 5 ♂, 2 ♀ dark. The specimens from the last two localities were old, but there was no reason to suspect that the dark tint was due to any change in the pigment. Modern changes in the distribution of the two forms were, however, quite possible and it would be extremely interesting to study a long series recently obtained from Cape Coast Castle and Cape Palmas. Indeed, the distribution of the colour forms of *D. chrysippus* throughout the whole of its range offered a fascinating subject for systematic investigation.

MIMETIC ASSOCIATIONS OF LEPIDOPTERA TAKEN IN AUGUST 1926, ON KOME ISLAND, N.W. VICTORIA NYANZA, BY MR. AND MRS. W. C. SIMMONS.—Prof. POULTON gave an account of the Associations to be found in Mr. and Mrs. Simmons' collection on Kome I., and exhibited examples of the constituent members. He had received much kind help from his friends Dr. Eltringham and Dr. Dixey in determining the ACRAEINAE and PIERINAE, respectively.

I. DANAINE-CENTRED ASSOCIATIONS.

a. Amauris niavius niavius, L., and its mimics. Fifteen examples of the model (10 ♂, 5 ♀) were taken. Of these 1 ♂ and 2 ♀ were somewhat transitional towards the eastern race *dominicanus*, Trim., as shown by a slight extension of the H.W. basal white patch beyond the cell. All the mimics belonged to the Nymphaline genus *Hypolimnas* (*Euralia*), and of these the single *H. dubia*, Pal., f. *anthedon*, Dbl., was transitional towards the eastern form *wahlbergi*, Wllgrn., mimicking *dominicanus*. The other species, only mimetic in the females, were *H. monteironis*, Druce (1 ♂, 4 ♀), and *salmacis*, Drury (1 ♀). Seven ♂ *Papilio d. dardanus*, Brown, were taken but not the ♀ f. *hippocoön*, F., so well known as a member of this association.

b. Amauris damocles, Beauv., and its associates. Four ♂ and 3 ♀ *damocles*, of the following forms, were taken:—1 ♂ of the f. *damocles*; 2 ♂, 1 ♀ *psyttalea*, Plotz, although the H.W. white patch does not quite reach the apex of cell in 1 ♂ and 1 ♀, and the submarginal H.W. spots of the latter are nearly obsolete; 1 ♂, 2 ♀ *psyttalea* transitional to *damoclidea*, Staud., with the H.W. patch far beyond the cell, but the H.W. submarginal spots rather small in 1 ♀. The associates, all Nymphalines, can hardly be looked on as mimics, although their white pattern on a dark ground has, in some of the species, considerable resemblance to the Danaines. The species taken were—7 *Pseudacraea lucretia*, Cram., the Uganda race; 3 *Neptis melicerta*, Drury; 1 *N. nemetes*, Hew.; 1 *N. ? jordani*, Neave; 1 *Neptidopsis ophione*, Cram. The mimetic relationship of *Neptidopsis* to *Neptis* can hardly be doubted.

c. *Amauris oscarus*, Thur., and its mimics. One ♂ and 1 ♀ of the model were taken. The pattern resembles that of *Am. echeria*, Boisd., which is replaced by *oscarus* in Uganda. The Nymphaline mimics include 1 *Hypolimnas dubia* f. *dubia*; 1 *H. dinarcha*, Hew., the Uganda f. *grandis*, Rothsch.; 9 ♂, 1 ♀ *Aterica galene*, Brown, the ♀ a much closer mimic. It is interesting to note that, of the two forms of *H. dubia* in the collection, one entered Association a, and the other this Association c. The Acraeinae mimics were represented by 5 *A. servona*, Godt., and the Papilionine by 2 *P. (Cosmodesmus) uganda*, Lathy.

d. *Danaida chrysippus*, L., Association. No example of *chrysippus* appeared in the collection. The Nymphaline *Hypolimnas misippus*, L., was represented by 1 ♀ of the f. *inaria*, L., mimicking the *dorippus*, Klug, f. of *chrysippus*. The ACRAEINAE included an interesting series of 24 *A. encedon*, L., including the following forms—7 ♂, 1 ♀ *encedon* mimicking *chrysippus*, the ♀ and 1 ♂ rather dusky, 1 ♂ with yellow F.W. oblique band; 2 worn ♂ apparently transitional from *encedon* to *daira*, G. & S., mimicking *dorippus*; 3 ♂ near the f. *sganzini*, Boisd.; 6 ♂, 5 ♀ *lycia*, F., 5 ♂ yellowish, 1 ♂ with F.W. dusky except for oblique band, 5 ♀ white with the F.W. of one slightly transitional towards the dusky form. The small proportion of females and the tendency towards sexual dimorphism in the *lycia* f. with the white females, are interesting. This Association also included two species of moths—1 Hyspid *Phaegorista similis*, Walk., and 7 *Cartaetis variabilis*, Butl. (GEOMETRIDAE), with the characteristic pattern, but a very washed-out-looking colour.

II. ACRAEINE-CENTRED ASSOCIATIONS.

These associations are of great interest in relation to Dr. G. D. H. Carpenter's paper in *Trans. Ent. Soc. Lond.*, 1920, p. 84, and the earlier publications there quoted. His conclusions received striking confirmation from the material collected by Mr. and Mrs. Simmons. Dr. Carpenter's sequence of *Planema*-centred combinations (*ibid.*, pp. 86–93) is adopted below.

IA and IB.—*Planema poggei nelsoni*, Gr. Sm., and ♂ *Pl. macarista*, E.M.Sh., and their mimics. No models were taken, but 2 *Pseudacraea eurytus hobleyi*, Neave, ♂ f. m. *hobleyi*, are present and the only ♀ *Pap. dardanus* is the f. m. *planemoides*, Trim. Carpenter records (p. 90) 1 ♂ *poggei nelsoni* and 8 ♂ f. m. *hobleyi* on Kome I. in his 1918–19 collection.

II.—*Pl. macarista* ♀, *Pl. alcinoe camerunica*, Auriv. ♀, and *Pl. aganice montana*, Butl. ♀, and their mimics. The only model is a single ♀ *montana*. No males of the three models were taken, and no mimic is present, although a ♂ *Acraea jodutta*, F., renders it probable that the commonest ♀ f., *jodutta*, resembling the ♀ *Planemas*, exists on the island. Two ♀ *Ps. eurytus hobleyi*, somewhat transitional towards the ♀ f. m. *tirikensis*, Neave, are described in Association IV (p. 62). Carpenter records 1 ♂, 2 ♀ *camerunica*, 1 ♀ *montana*, and, among the mimics, 5 ♀ f. m. *tirikensis*.

III.—*Pl. epaea paragea*, Gr. Sm., and its mimics. No example of *paragea* was taken, but *Pl. consanguinea arenaria*, E.M.Sh., was very abundant, being represented by 14 ♂ and 11 ♀, and it is possible that this *Planema* may to some extent take the place of the model. Five ♂ *Papilio cynorta*, F., were taken but no female, and it is uncertain whether the Kome I. form of this sex is *peculiaris*, Neave, mimicking *paragea*, or the f. *cynorta*, which would enter Association II as an outlying mimic.

Both forms of female exist in Uganda, together with intermediate varieties. Only one of the transitional forms of the f. m. *terra*, Neave (Association IV), indicated some slight affinity with the f. m. *obscura*, Neave, a beautiful mimic of *paragea*. A single *obscura* is the only Kome I. member of III recorded by Carpenter, but among the 22 transitional varieties of *hobleyi* which he also records some and probably many are sure to show affinity with this mimetic form.

IV.—*Pl. tellus eumelis*, Jord., and its mimics. Ten ♂ and 2 ♀ of the model were taken with 14 ♂ and 10 ♀ of the f. m. *terra* of *Ps. eurytus hobleyi*. All except three transitional females are beautiful mimics of the *Planema*. It is also interesting to observe that in 5 ♂ of the latter, the F.W. markings, especially the oblique band, are pale in tint and that a similar variation is exhibited by 2 ♂ and 5 ♀ of the mimic. The paleness varies in the degree of development in different examples of both model and mimic. In one male *terra* the F.W. cell is slightly tinted with orange-brown and includes a more deeply marked although small spot of the same colour, but it is doubtful whether the mimetic resemblance would be reduced by this slight difference when the insect is on the wing. Of the three transitional females, one with a nearly white F.W. band and narrow inner marginal marking, and a broad black margin to H.W., appears to be slightly transitional towards *tirikensis*. The second, a worn specimen, exhibits a similar pattern but the F.W. inner marginal marking is nearly white and the H.W. of a very pale orange gradually transitional into the broad dusky margin. This specimen seems to approach both *tirikensis* and *obscura*. The third female is a beautiful example of the form *impleta*, Grünb. (*Trans. Ent. Soc. Lond.*, 1913, pl. xxxvi, fig. 16, representing a specimen from Damba I.). This interesting form combines with the colour of *terra* an approach towards the F.W. pattern of the ♂ *hobleyi* and the ♀ *poggeoides*, Poult.

Another interesting feature in many of these Kome I. *terra* is the retention of a trace, varying in different specimens, of the reddish-brown marking at the base of the H.W. under surface—a marking mimetic of certain *Planema* models, but wanting in *tellus eumelis* and in its fully formed mimic, *terra*. These traces remain on 5 ♂, of which two exhibit the pale F.W. markings, and on 6 ♀, including the three transitional varieties. Carpenter records 21 ♂ *Pl. tellus eumelis*, 19 *terra* and 22 transitionals from Kome I. (1918–19).

It is of great interest to compare these results with those obtained by Carpenter, but want of space prevents a detailed examination on the present occasion. The very high proportion of the mimetic form *terra* and the small proportion of intermediates may probably be explained by the almost complete absence of any *Planema*-model except *tellus eumelis*.

III. ACRAEINE ASSOCIATIONS.

The Association of black, red-marked Acraeas was strongly represented in the Kome I. Collection, and includes the following species.

Acraea egina, Cram.,—6 ♂, 3 ♀, all near the western race *egina*, and the males very constant. Of the females two were light grey with a faintly pinkish tinge, the third being darker grey and less pink. All the females of this and the next species possess a white subapical F.W. band and would resemble one another on the wing.

Acraea zetes, L.,—13 ♂, 7 ♀. One pair captured *in coitû* have been preserved with wings closed. Of the remaining eighteen 4 ♂ are the western race *zetes*, while 8 ♂ and 6 ♀ are the much redder, more eastern race *jalema*, Godt.

Other members of this Association are—1 ♂ *Acraea perenna*, Dbl.; 1 ♂ *A. orina*, Hew.; and 1 ♀ *peneleos pelasgis*, Gr. Sm.

Acraea bonasia alicia, E.M.Sh., was represented by 14 ♂, 3 ♀, the latter including 1 f. m. *tenelloides*, Poult., and 2 f. m. *cabiroides*, Poult. One *A. cabira*, Hoppf., the under surface model of *cabiroides*, was also taken.

The occurrence together on this island of *A. terpsichore*, L. (1 ♂, 3 ♀), with the f. *ventura*, Hew. (3 ♂, 1 ♀), and the absence of intermediates, suggest that these two forms are distinct species.

The study of this collection of butterflies yielded a few additional notes deserving of record.

All five *Charaxes* of the Varanes Group were *fulvescens monitor*, Rothsch.

A male of *Ch. lucretius*, Cram., and of *Ch. e. etheocles*, Cram., were found resting together under a leaf.

Ch. zingha, Stoll., was abundant, twelve examples, including two pairs *in coitû*, being taken. *Ch. pollux*, Cram., the model of the ♀ *zingha* was not captured.

The collection contains 1 ♂, 2 ♀ of *Euryphene absolon entebbiae*, Lathy, but no *Catuna*, the model of the female.

Seven examples of *Precis archesia*, Cram., were all, as was to be expected in this area, of the wet season form *pelasgis*, Godt.

Among the Pierines, 1 ♂, 2 ♀ of *Phrissura sabina*, Feld. (*phoebe*, Butl.) were taken, but no *Mylothris*-model of the female, although a single ♂ *M. rubricosta*, Mab., is present.

All three *Nychitona medusa*, Cram., are of the form *nupta*, Butl., being almost entirely white with only the faintest black line encircling the rounded apex of the fore-wing. The Liptenine mimic *Larinopoda tera*, Hew., of which a single example was taken, closely resembles this form of *medusa*.

Mr. F. W. EDWARDS gave an account with lantern illustrations of a collecting trip to Patagonia and South Chile.

Wednesday, November 16th, 1927.

Mr. J. E. COLLIN, President, in the Chair.

Obituary.

The PRESIDENT announced the death of Professor A. BERLESE, Hon. Fellow of the Society, Mr. S. A. BLENKARN, Fellow, and Lt.-Col. J. W. YERBURY, Special Life Fellow. A vote of condolence to the relatives of Colonel Yerbury was passed.

Nomination of Officers and Council for 1928-9.

The SECRETARY announced that the Council had nominated the following as Officers and Council for 1928-9 :—

President. J. E. COLLIN.
Treasurer. W. G. SHELDON, F.Z.S.
Secretaries { S. A. NEAVE, M.A., D.Sc., F.Z.S.
 { N. D. RILEY, F.Z.S.
Librarian. H. J. TURNER.

Other Members of the Council.

R. ADKIN, P. A. BUXTON, M.A., E. A. COCKAYNE, M.A., M.D., F.R.C.P., H. M. EDELSTEN, H. ELTRINGHAM, M.A., D.Sc., F.Z.S., Capt. A. F. HEMMING, C.B.E., F.Z.S., R. W. LLOYD, Prof. R. STEWART MACDOUGALL, M.A., D.Sc., F.R.S.E., G. A. K. MARSHALL, C.M.G., D.Sc., F.R.S., J. W. MUNRO, D.Sc., W. H. T. TAMS, A. E. TONGE.

Election of Fellows.

The following were elected Fellows of the Society :—J. F. JOHNSTONE, Rutley Lodge, Claygate, Surrey; A. J. RICHARDS, Hazeldene, Hindhead, Surrey; R. C. WOOD, Magombwa Estate, P.O. Cholo, Nyasaland.

Exhibits.

A BRITISH EXAMPLE OF *MYELOIS CIRRIGERELLA*.—Mr. H. J. TURNER, on behalf of Mr. W. Fassnidge, exhibited a specimen of *Myelois cirrigerella*, Zk., captured at Winchester. The species was first taken in this country by Mr. Edward Meyrick near Marlborough at the end of June 1874. No subsequent capture has been reported until the present example. The species is well distributed in Central Europe, but apparently occurs only rarely. Nothing seems to be known of its life-history according to Barrett, and more recently Spuler says that the larva is unknown.

A PROTHORACIC STRUCTURE IN THE LARVA OF *PLATYPTERYX LACERTINARIA*, L.—Dr. E. A. COCKAYNE exhibited examples of larvae of *Platypteryx lacertinaria* and said :—

“A process arises on each side of the prothorax just outside the leg. In the blown larva it projects at right angles to the surface and consists of a basal part formed of chitin like that of the skin and an apical part of thicker darker chitin. The two parts are approximately equal in size and are sharply demarcated by a groove and a dark line. Across the blunt top of the apical part is a shallow groove running obliquely forwards and slightly inwards. This groove is crossed at right angles to its long axis by a series of ridges with roughened apices, which are continued over the edges and down the distal half of the apical portion of the process. A series of parallel ridges also runs across the anterior surface of the apical portion of the process at right angles to its long axis. There are no hairs on the process. In the living larva the processes are retracted and are seen as dark oval marks, but I think there is little doubt that they can be erected. They seem to be too far back,

too far apart, and too large to be the prothoracic glands, though I cannot see any prothoracic glands in this larva. The structure they resemble most closely is that described by Dr. T. A. Chapman in the larva of the saw-fly, *Eriocampa limacina* (*Ent. Month. Mag.*, 1900, 36, 228). In this larva there is a process arising in front of and to the inner side of each prothoracic leg. The process is tapering and divided into three parts, the tip being dark and corneous and provided with minute hairs. Chapman found that the processes were erected when the larva fed, and thought that they were used to prevent the loss of sap from the leaves."

RESEMBLANCE BETWEEN A PHOLCID SPIDER, A TIPULID, AND A REDUVIID IN SAMOA.—Dr. P. A. BUXTON exhibited specimens and made the following observations. In Samoa, TIPULIDAE of the genus *Trentepohlia* are abundant; several species habitually sit in dark places in the forest, for instance between buttress roots; in these places large numbers are found together, covering an area of a square foot or more; these insects, standing close together, sway themselves rapidly and continually on their long legs. The commonest species in Samoa is *T. pacifica*, Alex., and one frequently sees a large area of bark the whole surface of which seems to shimmer, owing to the numbers of these insects standing and swaying on it. Occasionally they hang from one another like bees in a swarm. In appearance this species is rather distinctive, for the legs are dull brown with white areas at the distal parts of all femora and all tibiae, and with white tarsi.

REDUVIIDAE of the genus *Gardena* (perhaps two species) also occur; they are of an extremely fragile "tipuloid" type, in colour dull brown, with conspicuous white, femora-tibial areas. They are rare, or rarely caught, and nothing is known of their habits; they will not be further discussed.

Spiders of the family PHOLCIDAE have the same habit of swaying rapidly as they stand in their webs; frequently a dozen or more stand and do this in a single web, and as the webs are placed in situations similar to those occupied by the *Trentepohlia* some degree of superficial resemblance is achieved. It appears that PHOLCIDAE stand and shimmer in their webs, in many parts of the Tropics, and elsewhere. In Samoa the species which have been observed to do this are *Pholcus ancoralis*, and *Smeringopus elongatus*; they are superficially similar, and were not distinguished in the field, but it seems that both species have the habit. They are dull brown in colour, with long legs, the joints of which are whitish, and the resemblance between them and the *Trentepohlia* was noticed in the field.

In range *Trentepohlia pacifica* is peculiar to Samoa. Of the spiders, *Pholcus ancoralis* is known only from Samoa and Tonga; *Smeringopus elongatus* has a wide tropical distribution. Within Samoa, the *Trentepohlia* and the spiders (collectively), both range from the coast of Upolu to the top of the island, at about 2,000 feet. One may therefore say that they are coextensive in range, and that they inhabit similar places; also they are similar in colour and in habit, and this makes it difficult to suppose that the resemblance is due to chance alone. It is possible that the relation is mimetic; if this view is adopted then presumably the spider is model, the Tipulid mimic, and the Tipulid has used the shimmering habit, common to many Tipulids, and has also copied the spider's pattern and colour. Such a view covers most of the facts, so far as they are known, but it is not easy to see what advantage could accrue to the insect from resembling the spider.

On a single occasion a spider, *P. ancoralis*, was found eating a Tipulid in its web; the insect was *Trentepohlia brevicellula*, Alex., a species without white bands on the legs.

The Arthropods have been determined by the following authorities: Spiders L. Berland; TIPULIDAE, F. W. Edwards; REDUVIIDAE, W. E. China.

Mr. F. W. EDWARDS remarked that the occurrence of white knees and white tarsi, or white tarsi alone, was not very frequent in TIPULIDAE, but nevertheless had been observed in a number of unrelated genera. It might be significant that TIPULIDAE of several different genera had been recorded as resting in spiders' webs, and that most if not all of these have white tarsi. In the case of *Thrypticomys*, the insects are said to suspend themselves in rows from a horizontal web and perform a concerted dance.

MONGREL RACES OF *DIACRISIA MENDICA*, CLERCK.—Mr. ROBERT ADKIN exhibited representative series of further families (*Proc. Ent. Soc. Lond.*, vol. ii, p. 15) obtained by crossing and re-crossing *mendica* with its race *rustica*, viz.—

A second generation of the cross between a *rustica* ♂ (King's Co.) × *mendica* ♀ (Suffolk). He said it would be remembered that of the 94 specimens of males bred in the first generation (1926) of this cross practically all were intermediate in colour between the two races, the exception being four specimens which were as pale as the *rustica* parent; none were as dark as the males of the original female parent stock. In this second generation (1927) there appeared to be a tendency towards segregation. Of the 48 males reared 16 were referable to *rustica*, 15 to *mendica*, and 17 were intermediate. The number of females reared was 94, thus showing a proportion of practically two females to one male. Loss by disease amounted to just over 10 per cent. of the larvae, from the time of their counting when about half grown.

A re-cross between a mongrel ♂ (King's Co. × Suffolk) × *rustica* ♀ (King's Co. × Cork) produced 54 males of which 27 were referable to *rustica* and 27 intermediate; and 52 females. The loss by disease was 19 per cent. The original King's Co. and Suffolk stocks were both somewhat more heavily spotted than the Co. Cork, and this feature is noticeable in this brood as compared with the following, where the proportion of Cork blood was greater. The fact of re-crossing alone does not appear to increase the tendency to heavier spotting.

A re-cross between a *rustica* ♂ (Cork) × a mongrel ♀ (Cork × Suffolk) produced 67 males of which 34 were of the *rustica* form and 33 intermediate; and 70 females. This was a comparatively healthy brood, the loss by disease being approximately 10 per cent.

A re-cross between a *rustica* ♂ (King's Co. × Cork) × a mongrel ♀ (Cork × Suffolk) produced 40 males of which 23 followed the *rustica* form and 17 were intermediate; and 55 females. The percentage of loss by disease was not ascertained, but in this brood it was heavy, possibly reaching some 50 per cent. of the larvae.

SPANISH RACES OF THE *LYCAENA CORIDON* GROUP:—Brig.-General B. H. COOKE exhibited some series of various races of the *Lycaena coridon* group taken in Spain in 1927. They consisted of the following:—

(1) A series of the large *albicans* form with very pale upperside and white

underside with very small spots, taken in the Sierra Nevada and Sierra de Alfacar at about 4,400 ft. from 17th June. The females have a pale brown upperside.

(2) A series forming a transition between *albicans* and *aragonensis*, with pale coffee-coloured underside to hind-wings and larger spots, taken at the same time and localities as (1).

(3) A fine race, also transitional between *albicans* and the *aragonensis* from Aragon, taken in the Sierra de Espuña from 23rd July between 2,600 and 4,000 ft. The upperside of the males has a bluer tinge, and the underside of hind-wings has a pale coffee ground-colour and large bright orange spots along the outer margin. Several males have small orange spots along the outer margin of the hind-wings upperside.

(4) A series (also transitional) taken on a plateau near La Roda, a few miles from Albacete, at 2,300 ft. These specimens much resemble the Espuña race, but they are smaller and the black and orange spots are less conspicuous.

(5) Another transitional race from Valdeganga de Cuenca in the Jucar valley at 2,800 ft., some specimens of which resemble the Espuña race, others the La Roda race. One small male is different from any other taken this year. It is very small and is darker on the upperside. The underside of all wings is of a uniform dark grey colour.

(6) A series of *aragonensis* from Albarracin and Losilla between 3,600 and 4,000 ft. This is presumably the true *aragonensis* and is darker than any of the transitional forms, both on the upper and under sides.

(7) A series of the bright blue *bellargus*-like race, named by Verity *caelestissima*, taken at Noguera (Aragon) at 4,300 ft. One female has the lower half of the left fore-wing of the male colour.

(8) Two males of a pale blue insect, with underside resembling *caelestissima*, but rather darker. They are both of much the same colour on the upperside as *coridon* from Gavarnie, but slightly paler. One of them has the black markings of the upperside similar to a small *aragonensis*, while the markings on the other resemble *caelestissima*. Captain A. F. Hemming considers that these specimens belong to the race taken by Signor Querci in "alpine surroundings in Aragon and Castile" and referred by him to *caerulescens*, Tutt. Señor de Escalera of the Natural History Museum at Madrid has taken similar specimens at Tragacete in the Cuenca mountains, among *caelestissima*.

General Cooke stated that he had, to the best of his belief, established the fact that no spring brood of any *coridon*-like race occurs at either sea-level in Murcia, or in the Sierra de Espuña, or anywhere in the neighbourhood of Albarracin or Noguera.

Captain HEMMING was unable to be present at the meeting, but he authorised General Cooke to communicate the following note regarding his views:—

"Judging from the superficial characters of the various *coridon*-like forms of *Agriades* found in Spain and pending the completion of my examination of their genitalia, I think it probable that there are four distinct species involved, viz.—

"(a) A Catalanian race of *A. coridon*, Poda, and the scarce race *caerulescens*, Querci, nec Tutt, from Aragon and Castile. Single-brooded.

"(b) *A. caelestissima*, Verity, the bright blue *thetis*-like insect from Aragon

and Castile, with its race *asturiensis*, Sagarra, from the Cantabrian mountains. Single-brooded.

"(c) The large white or greenish-white insect, including the form usually called *A. albicans*, Bdv., from Andalusia, and *arragonensis*, Gerh., from Aragon, and other allied races. Single-brooded.

"(d) The double-brooded Mediterranean insect *A. hispana*, H.-S., found in Catalonia, in some cases in company with true *coridon*."

MENDELIAN INHERITANCE OF A REMARKABLE PALE VARIETY OF LARVA IN *ABRAXAS GROSSULARIATA*, L.—Prof. POULTON exhibited a beautiful coloured drawing in which his kind friend Dr. H. Eltringham had represented upon their food-plant, *Prunus pissardii*, two of the larvae described in *Proc. Ent. Soc. Lond.*, vol. i, 1926, p. 23, and footnote. The larvae reared in 1926–27 from the eggs laid by a female bred from one of these larvae and paired with a wild male, were all normal in appearance. Three fertile pairings were arranged between the moths bred from these larvae. On 4 November, 1927, when sleeves containing the small larvae were taken down and transferred to a cellar for hibernation, several pale larvae were observed in each of the three families. All of them were smaller than the normal larvae in the same families, a fact which corresponds with the comparatively late development of the three original larvae, although a normal size was ultimately attained by the sole survivor. There could be no doubt that this pale form behaves as a Mendelian recessive.

Prof. R. C. Punnett, F.R.S., had kindly written the following note on the subject of Mendelian inheritance in larvae.

"7 November, 1927.—There are several cases known in which hereditary larval characters are not accompanied by any visible difference in the imago. The best examples are in silkworms where there are very marked pattern differences in the caterpillars though the moths are apparently all alike. Some references are given below :—

"Y. Tanaka, *Journ. Coll. Agr., Sapporo*, vol. v, Pt. iv, 1913; vol. vii, Pt. iii, 1916. *Journal of Genetics*, vol. xii, No. 2, 1922.

"K. Toyama, *Journ. Coll. Agr., Sapporo*, vol. ii, 1909.

"Also there is Gerould's case in *Colias philodice* (*Journ. Exp. Zool.*, xliii, 1926). There is also H. Federley's case in *Choerocampa elpenor* (*Öfversigt af Finska Vetenskaps-Societetens Förhandlingar*, lviii, 1915–16),—curious because in spite of the marked dimorphism in the larva there appeared to be no Mendelian segregation.

"I may add that one meets a similar phenomenon in chickens. There are two distinct types of down in Indian Game and these segregate, but no difference is to be found in the plumage of the adults. (Reports to the Evolution Committee of the Royal Society, I, p. 88, and IV, p. 33)."

PAIRS OF *DANAIDA CHRYSIPPUS*, L., AND OF THREE ACRAEINE SPECIES, TAKEN IN COITÛ AT ZAIPÍ, E. MADI, N. UGANDA, BY DR. G. D. H. CARPENTER.—Prof. POULTON exhibited all the pairs of *D. chrysippus*, *Acraea encedon*, L., *A. caecilia*, F., and a selection of pairs of *A. caldarena*, Hew., which he had received from his friend Dr. Carpenter, D.M., M.B.E. All were taken at Zaipi except one pair of *caldarena*

and one of *caecilia* from Pakelli (28 May, 1927) in the same district. A description of the locality at Zaipi appeared in the *Proceedings* of 5 October, 1927 (p. 44), but the following additional details were given in a later letter, with a sketch showing the line of flowering Acacias and the swamp lying in an angle made by the main road from Zaipi to Gulu.

"29 August, 1927.—The line of Acacia bushes was very narrow and stretched along the edge of a large area of rushes growing in swamp. There were several wart-hog wallows and drinking-places, and all the grass was grazed short by stock and game. The Acacias and swamp lay, at the bottom of a slope descending from the camp, in a broad shallow valley in which the grass was growing fairly high, and there was thin open bush with a few *Borassus* palms. Beyond the swampy area (which was fairly wide) were two rivers. The Acacia bushes formed formidable thickets, being *frightfully* thorny so that I could not catch any of the insects of many types which came to the dirty-white flowers—not balls but more like pencils. But the Acacias formed a good line of shelter, and butterflies of other kinds besides *D. chrysippus* congregated there, *not to drink on the mud*, for I saw none save a few LYCAENIDAE doing that, but to feed on the strong-smelling blossoms in company with hosts of divers species of Hymenoptera (including that large Sphegid, on which a note has been sent), beetles, moths, and Diptera. The muddy pools were quite small, and evidently mainly for the use of wart-hogs, but they had produced great numbers of a vicious *Chrysops* and I found in one of them the Crustacean * I mentioned—something like *Cheirocephalus*, so far as I could tell when I got back to books and compared the picture with my memory. Not only *chrysippus*, but several common *Precis*, and an *Acraea* [probably *caldarena*] also caught *in cop.* and sent, were feeding on the blossoms. As regards the time of pairing, I am sure that it was after mid-day, for I spent one morning there and took no pairs, but went again about 4.30 and caught four pairs of the *Acraea* and one of *chrysippus*. I could not help feeling that the combination of food and shelter was responsible for the pairing. As the sun went down the Danaines settled, apparently for the night, among the thorn bushes.

"I had rather an interesting experience on my final journey through Zaipi on 4 July, when I visited the place again in the late afternoon. It had been a wet morning and there had been very little sun in the afternoon. The Acacia flowers were over, but, in the watery evening sun, large numbers of very fresh *chrysippus* were sunning themselves on the tops of grass-stems. No pairs were to be seen anywhere. I could not help feeling that this was probably a *breeding place*, and that the food-plant of *chrysippus*, unknown to me, existed there in abundance.

"As regards proportions of the varieties present, I knew you would want to know that (and so did I!), but I had to decide between catching pairs *in cop.* or collecting every specimen I saw, without discrimination. I chose the former course. The f. *albinus* was certainly the rarest, but there was probably not much to choose between the other forms. I know I was particularly anxious to catch an *albinus in cop.* to complete the series, as I had got all the other forms paired and I think (from memory) in all combinations."

* Kindly determined as *Streptocephalus bowieri*, Daday, by Dr. W. T. Calman, F.R.S.

Pairs taken in coitū.	Date in 1927.	Form and condition of male.	Form and condition of female.
I. Seven pairs of <i>D. chrysippus</i> , both ♂ and ♀ of the same type form <i>chrysippus</i> .	June 11	<i>Chrysippus</i> . Very light. Fresh.	<i>Chrysippus</i> , faint trace of <i>alcippus</i> . Nearly fresh.
	" 11	<i>Chrysippus</i> . Dark. Slightly worn.	<i>Chrysippus</i> , as above. Slightly worn.
	" 11	<i>Chrysippus</i> , faint trace of <i>alcippus</i> . Slightly worn.	<i>Chrysippus</i> , as above. Slightly worn.
	" 8	<i>Chrysippus</i> , as above. Much worn.	<i>Chrysippus</i> . Fresh.
	" 8	<i>Chrysippus</i> . Worn.	<i>Chrysippus</i> , faint trace of <i>alcippus</i> . Fresh.
	" 11	<i>Chrysippus</i> , faint trace of <i>alcippus</i> . Much worn.	<i>Chrysippus</i> . Dark. Fresh.
	" 10	<i>Chrysippus</i> . Much worn.	<i>Chrysippus</i> . Much worn.
II. Five pairs, of which each shows some distinct tendency to the f. <i>alcippus</i> in ♂ or ♀ or both.	" 11	<i>Alcippus</i> , white moderately developed. Much worn.	<i>Alcippus</i> , white moderately developed. Worn.
	" 11	<i>Chrysippus</i> . Worn.	<i>Chrysippus</i> . White slightly developed. Worn.
	" 11	<i>Chrysippus</i> . White very slightly developed. Worn.	<i>Chrysippus</i> . White moderately developed. Worn.
	" 6	<i>Chrysippus</i> . White moderately developed. Rather fresh.	<i>Chrysippus</i> . Dark. Fresh.
	" 8	<i>Chrysippus</i> . White very slightly developed. Worn.	<i>Alcippus</i> , with strongly de- veloped white. Darkish. Worn.
III. Seven pairs, in each of which either ♂ or ♀, or both are the f. <i>dorippus</i> .	" 11	<i>Dorippus</i> . Rather worn.	<i>Dorippus</i> . Beak-mark on L.F.W. Rather worn.
	" 6	<i>Dorippus</i> . Worn.	<i>Chrysippus</i> . Fresh.
	" 10	<i>Dorippus</i> . Prob. beak-mark L.F.W. Worn.	<i>Chrysippus</i> . Rather worn.
	" 5	<i>Dorippus</i> . Worn.	<i>Chrysippus</i> , with faint trace of <i>alcippus</i> . Much worn.
	" 11	<i>Dorippus</i> . Rather worn.	<i>Chrysippus</i> , with rather more of <i>alcippus</i> than above ♀. Rather worn.
	" 8	<i>Chrysippus</i> . Much worn.	<i>Dorippus</i> . Very much worn.
	" 6	<i>Alcippus</i> . F.W. subap. bar = <i>orientis</i> . Worn.	<i>Dorippus</i> . Worn.

Danaida chrysippus.—The combinations in the various pairs of this species were most interesting, and abundantly confirmed the observations of the late Col. J. W. Yerbury and Col. C. G. Nurse at Aden, quoted in *Proc. Ent. Soc. Lond.*, 1924, p. cxx. It was pathetic to think of the pleasure which Col. Yerbury would have felt in hearing or reading the account of Dr. Carpenter's observations. The pairs of *chrysippus* from Zaipi had been arranged in three groups (p. 70). The first of these (I), in which the form *chrysippus* had paired with another of the same form, contained several specimens with faint traces of the hind-wing of *alcippus*, Cram., in the white edging of some of the H.W. veins. Either one or both sexes in the pairs of the second group (II) showed a distinct tendency towards the *alcippus* form, the whitest being classed as full *alcippus*. The third category (III) contained the form *dorippus*, Klug, paired with the same form, with *chrysippus*, *alcippus* and intermediates between these last two. The ground-colour, unless otherwise noted as dark or darkish, was of the lighter tint described in the *Proceedings* of 2 November, 1927 (p. 59), the male first on the table being exceptionally light. The last male is interesting in possessing the F.W. subapical band of the E. and S.E. African race, *orientis*, Auriv.

The condition of the specimens, carefully noted with Dr. Eltringham's kind help and recorded in the table, renders it almost certain that pairing occurs more than once in this species. The males of all the 19 pairs were observed to carry the females in flight.

Acraea caldarena, Hew.—Twenty-eight pairs of this species were taken by Dr. Carpenter on the following dates—28 May (at Pakelli)—1; 2 June—3; 5 June—5; 6 June—5; 8 June—4; 10 June—3; 11 June—7. In all of these, except the 3 pairs of 2 June, the male was observed to carry the female in flight. Some of the females were distinctly larger, others distinctly smaller than the males. There was wide variation in the development and extent of the dark shade in the H.W. and base of F.W. in the females. Half of the females were fresh or nearly so, the others more or less worn, suggesting that more than one pairing occurs in this species, in which, as in the following two, the sphragis is feebly developed.

Acraea c. caecilia, F.—One pair was taken at Pakelli on 28 May, another at Zaipi on 6 June. The male of the latter was observed to be carrying the female which was slightly the larger, the Pakelli female being distinctly larger than the male. Both females were more worn than the males, leading to the conclusion suggested above.

Acraea encedon, L.—Two pairs were taken on 8 June, and in both it was noted that the much larger female was carrying the male, thus contrasting with all the species previously mentioned. The correlation with relative size is an obvious conclusion. One female, of the form *encedon*, was paired with a male *lycia*, F.; the other female, a pale *encedon* with the F.W. subapical band of the same dull orange tint and therefore transitional towards *daira*, Godm. & Salv., was paired with a dark male *encedon*, near the f. *infuscata*, Staud., with a yellow F.W. subapical band. All four specimens were worn, especially the second female, the paleness of which may have been partially due to this cause.

NOTES IN 1927 ON THE ABUNDANCE, PROPORTION OF THE SEXES, AND COURTSHIP OF *HYPOLIMNAS BOLINA*, L., IN FIJI, BY HUBERT W. SIMMONDS.—Prof. POULTON communicated the following notes extracted from letters written at Suva, Viti

Levu, by his friend Mr. Simmonds. A few interesting notes on other Fiji butterflies are also included.

"1927, August 14.—Both sexes of *H. bolina* seem just now equally numerous [at Suva]. Thus in a walk round Circular Road I saw three males and no female, while, on the land where I am building, I observed yesterday afternoon three females ovipositing, and only one male." *

"1927, August 25.—My garden is a bit of a waste at present, having only had the Lantana and scrub out. At lunch-time to-day I saw five female *bolina*, all ovipositing there. I have never before, I believe, seen so many at one time, in Suva. One was a beautiful form."

"1927, June 26.—I have been to Ovalau and my trip has given me a few things to report. First *H. bolina* was so scarce that, despite perfect weather, only one ♂ was seen in three days. I do not suggest any reason, but *bolina* has always, in my experience, been common to abundant on Ovalau. . . . I have seen the larvae in such abundance that I could hardly avoid crushing them as I walked.

"I took two specimens of *Hypolimnias antilope*, Cram., for the first time on Ovalau. The first I mistook for *Euploea macleayi*, Feld., and did not realise that it was not a *Euploea* until I had crossed the stream and was quite close to it. The second I recognised at once; it is much lighter in colour. *Papilio schmeltzi*, Herr.-Sch., was very common and I found the larva of *Doleschallia bisaltide*, Cram., again. I took an adult of this on Viti Levu for the first time a week or so back."

"1927, July 8.—As Mr. R. W. Paine was going to Vatulele, an island to the S.W. of Fiji and about 60 miles from Suva, I asked him to bring back *bolina*. He found butterflies most abundant and the form of *bolina* female, which was very variable, had generally a considerable area of orange in the fore-wing."

"1927, August 4.—I have to-day again watched a pairing of *bolina*, viz. Parent F5 with a wild ♂. The male saw her at a distance of about five feet and followed her, flying about six inches behind and at a rather lower level. He became more and more eager, pursuing with rapidly vibrating wings and occasionally a sailing flight, until in less than two minutes the female settled behind a leaf and pairing had taken place before I was able to reach the spot. Pairing in captivity has almost always taken place about 9.30 a.m.,† and unless the female accepted the male quickly, as in the instance described above, she generally refused to pair until another day. The female does not seem to exercise any choice and pairing is apparently determined by the chance which leads her to meet and recognise one male before another. The males pursue other species, and I have seen them chasing

* A letter, written 15 September and only just received, states that "*bolina* is more numerous and in greater variety and with a much larger percentage of males than I have seen in Suva during the past nine years." E.B.P., 25 November, 1927.

† The same hour is given in a letter of 26 June, which also contains these words—"The weather is very wet and it is interfering with pairing. I find they are slower to mate in the cool weather."

swallows.* F5 ♀ parent remained paired between two and two-and-three-quarter hours—about an average period.”

“1927, *August 14*.—Returning to the courtship of *H. bolina*. The male sees the female at 5 or 6 feet and dashes towards her. It is then, I think, that she recognises his pattern. He then flies below and sometimes slightly behind her, vibrating his wings rapidly with occasional sailings. Possibly at this time he emits a scent, but I have been unable to detect it. If she is going to accept him she does so within 30–90 seconds. Otherwise, the two butterflies fly round and round for a time until the female settles with closed wings, and, although the male continues to crawl over her and push under her with his wings, pairing seldom if ever takes place until another day. The male will fly after any moving object and play with another male for long periods. If, however, he approaches a fertilised female he is able, at the distance of about a foot, almost instantly to detect her condition, and at once leaves her. His actions suggest a positive stimulus due to some scent rather than the mere absence of an expected stimulus. I think that sexual selection keeps the male colours and pattern constant; for the female, flying above the male, is readily able to recognise these features. The flight of the male at a lower level and one less favourable for observation, and the fact that scent is probably the main factor with both sexes in pairing, may enable us to understand how it is that sexual selection will be less rigid for the female pattern, which is thus liable (1) to vary, (2) to inherit, directly or by reversion, the appearance of the male, (3) to revert to other ancestral patterns. Thus abundant material is provided for Natural Selection to evolve the wonderful mimetic patterns of some species, while less severe competition permits the survival of the astonishing variations found in certain islands. Sexual Selection will tend to render the male colours and pattern more easily recognised and more attractive to the female, although Natural Selection may prevent these tendencies from becoming manifest, producing Cryptic or Warning patterns with a primary appeal to the sight of enemies.”

The variability on islands was illustrated in the following passage from an earlier letter :—

“1927, *July 8*.—Mr. Paine also brought back from Vatulele a *Belenois* [*B. clarissa*, Butl., the Fijian form of *teutonia*, F.] which he said was extremely variable. It is very distinct from any I have met with elsewhere. It is strange that the variability on these islands should be so great, as Dr. Carpenter found on the islands in the Victoria Nyanza. No doubt it is lack of discriminate persecution which allows variations from the type to survive in these places.”

“1927, *August 28*.—To-day I saw, at very close quarters, a K3 ♂ mate with a K3 ♀. There was no preliminary play. She flew straight to a leaf, the male following about ten inches behind. She settled with wings slightly open and abdomen raised and the bursa apparently dilated. The male pushed himself underneath with

* Dr. P. A. Buxton has also observed the male *bolina* chasing a swift in the New Hebrides (*Proc. Ent. Soc. Lond.*, I, pt. III, 1927, p. 37). He thinks it likely that this was the bird mentioned by Mr. Simmonds.

wings open and fluttering. He then bent his abdomen round to the right and paired. A few seconds later he turned round and faced the opposite way to the female, thus straightening the abdomen. The whole operation, up to the assumption of the attitude last described, occupied less than twenty seconds, and, as the butterflies were not more than a foot distant, I could observe them carefully. No scent was noticed and I am convinced that the female made no selection. As soon as she was ready—and this seems to require a preliminary flight—she accepted the first male she recognised.”

It is hardly necessary to point out, and Mr. Simmonds has already emphasised the fact, that there would be selection between such a male and one with a pattern which the female did not recognise; furthermore, for the operation of the selective process, that the advances of the males need not be simultaneous but may be separated by as wide an interval as the susceptible period of the female will allow.

“1927, *August 28*.—There is a curious difference between the feeding habits of the male and female *bolina*. The male uncurls his spiral maxillae directly the syrup is put before him, being presumably attracted by its scent; the female, on the other hand, requires to have her spiral uncured for her and the end placed in the syrup before she will feed. This perhaps indicates a keener sense of smell in the male, as is also suggested by the mating habits. I have often noticed the above-described difference between the sexes, but there are exceptions on both sides.”

SCENT-TUFTS OBSERVED IN THE MALES OF CERTAIN COSTA RICAN LEPIDOPTERA, BY C. H. LANKESTER AND THE LATE A. G. M. GILLOTT.—Prof. POULTON communicated the following interesting observations from a letter written by Mr. C. H. Lankester :—

“*Hacienda las Concavas, Cartago, Costa Rica : 9 Oct., 1927*.—In the forest south of the Reventazon, near Peralta, a pair of *Arsenura*, *in cop.* by the side of a boundary line, showed me a fine androconial display. The male has (apparently on the coxae or very near) a pair of brownish spherical tufts like those of *Lycorea*, which, if they are used previously for attraction, remain open during copulation. . . . Do you know that *Morpho peleides*, Koll., ♂, and *Eumaeus minyas costaricensis*, Draudt, ♂, have anal androconial tufts (like *Lycorea*) ?”

Dr. Karl Jordan, who has done so much for the study of scent-organs in moths, had kindly written :—

“9 November, 1927.—*Arsenura* ♂ has a scent-organ near the base of the abdomen, as in SPHINGIDAE, NOTODONTIDAE, etc. This scent-organ is *not* present in the Saturnians, but occurs in the CERATOCAMPIDAE, of which the ARSEURINAE are the broad-winged development similar to Saturnians, while the CERATOCAMPINAE are the Sphingid-like branch.”

Capt. N. D. Riley and Prof. Poulton had examined the series of the strange Lycaenid genus *Eumaeus* in the British Museum and found a specimen which entirely confirmed Mr. Lankester's observation. The scent-tufts of the *Morpho* were also displayed in a male bearing the following label :—

"Costa Rica. Sent by A. G. M. Gillott to demonstrate possession of anal hair pencils in ♂♂ of *Morpho*. 1923—396."

In addition to these data on the specimen, the late Mr. A. G. M. Gillott had given the following account of the specimen in a letter written 1 August, 1923, to Capt. Riley :—

"A *Morpho peleides* ♂ which exhibits androconia in the form of two pompoms of white hair at the extreme bases of the claspers. I detected these when applying pressure to the end of the abdomen for the purpose of showing a friend the armature. I have never seen in the books of reference at my disposal any mention made of these androconia. Seitz distinctly states that these insects have no secondary sexual characters except a friction area."

AN ALL-FEMALE FAMILY OF *MYLOTHRIS SPICA*, MÖSCHL., REARED BY MISS M. E. FOUNTAINE FROM A COMPANY OF LARVAE AT BUEA (about 3000 ft.) IN THE CAMEROONS.—Prof. POULTON, in the absence of Miss Fountaine, recorded the fact that in June and July 1926, she had bred thirty-two females of *M. spica* from a batch of young larvae found on a single leaf of *Loranthus*. Thus, another butterfly with gregarious larvae was known to produce all-female families. The proportion which these bear to families with mixed sexes would probably vary in different localities, as Lamborn had found with *Acraea encedon*, L., and Simmonds with *Hypolimnas bolina*, L. Other families of the same *Mylothris* bred by Miss Fountaine at Buea included both males and females.

AN ADAPTATION WHICH TENDS TO PREVENT INBREEDING IN CERTAIN LEPIDOPTERA.—The species considered in the following discussion are *Poecilocampa populi*, L.; *Pachygastria (Bombyx) trifolii*, Esp.; *Lasiocampa (Bombyx) quercus*, L.; *Dimorpha (Endromis) versicolor*, L.; *Saturnia pyri*, Schiff.; *Saturnia pavonia*, L. (*carpini*, Schiff); *Aglia tau*, L.; and *Orgyia antiqua*, L. All of these will be referred to under the above specific names except *pavonia* for which the more usual name *carpini* will be employed.

Prof. POULTON said that for forty years he had been puzzled by the behaviour of "assembling" moths when bred from the pupa in captivity. Thus he had recorded in our *Transactions* for 1888 (p. 555) the results obtained in the previous year with *Aglia tau* :—

"Although this species belongs to a group in which the males 'assemble,' I found it very difficult to induce the moths to pair. In many cases the males and females emerged at nearly the same time, and ultimately died without having taken any notice of each other. In one single case, however, I found two moths paired, about 3 or 4 a.m., but they had separated a few hours later. The relative development of the male antennae seems to indicate that their habits must be very different in the wild state, and it is probable that the freshly-emerged female is scented from a very great distance by means of these highly specialised sense-organs. Dr. Dixey has also noticed very similar facts in the captive imagos of *Saturnia carpini*."

The behaviour of this last species in the wild state is well known (see pp. 77–80) and an interesting account of the "assembling" of *Aglia tau* is given by Mons.

F. Derenne in "Lambillionea." * A virgin female, found in the Forêt de Soignes on 6 May, 1927, was exposed at 9.30 a.m. on the following morning. In two hours Mons. Derenne had taken 125 "assembling" males. Some of these sought the box in which the female had been carried and others were attracted to the naturalist himself as a result of his handling the female moth.

Many naturalists, it was believed, have come to the conclusion that the delayed susceptibility of the bred males was due to the want of preliminary flight, although I have not met with any published record of this opinion. The following account of his experiments upon *Lasiocampa quercus* in the summer of 1922, kindly drawn up by my friend Dr. H. Eltringham, appear to prove that the opinion is well-founded:—

"About six dozen pupae were obtained from Mr. L. W. Newman. To what extent they were of the same batch of eggs I do not know. The original idea of the experiment was to hatch them out, and having placed some of the females in a suitable cage in the garden, to liberate males, clearly marked, and at various distances, so that I could discover how far they would fly in order to find the females. The sexes were sorted out roughly (by the size of the cocoons). It was not thought advisable to extract the pupae, lest the natural conditions should be so far altered as to affect the number of hatchings. They were distributed as follows:—the males in two or three small cages, about 5 in. \times 5 \times 8, and the females in a larger cage, about 18 in. \times 18 \times 20. The small cages were made with wood frames, glass sides and perforated zinc tops, and the larger one had two sides perforated as well as the top. When some of the females had emerged, the cage containing them and the remainder of the pupae was put out in the garden. Till then it had been in a cool greenhouse. Males, as they emerged, were liberated in the garden, at first close to the cage containing the females, but they flew away and disappeared. Although many of these males must have had an opportunity of returning during the time—probably about two weeks—when the large cage was in the garden, none ever reappeared. In only one instance did pairing take place. A male had escaped in the greenhouse. I do not know how long it had been at liberty—perhaps two days or so. I took the top off the cage containing the females, and liberated this male about 30 yards from the females. It flew about rather lazily for a short time without showing any tendency to fly towards the cage. As it finally settled in an accessible place I caught it again and threw it up in the air quite close to the cage (probably about 10 yards). It flew round rather slowly without any apparent reference to the females, but after a while came nearer, passed right over the open top, and fluttered into it. It fell against a female and pairing took place almost instantaneously.

"The females, without pairing, laid many eggs in the cage, being apparently impelled to lay whether they had paired or not. Occasionally a male emerged from a cocoon accidentally enclosed in the cage containing the females, but no pairing took place. Merely keeping the males for two or three days did not make them any more liable to 'assemble,' for they flew right away as soon as they were liberated. The instinct to find the female seemed connected with *flight*, as opposed to mere lapse of time."

* *Revue Mensuelle de L'Union des Entomologistes Belges*, Nos. 9 and 10 : ix, x, 1927 : Brussels, pp. 78, 79.

Confirmation has been forthcoming as the result of the observations of other naturalists. Thus Mr. L. W. Newman has kindly given me the benefit of his wide experience :—

“ *Versicolor* I breed in thousands and never have the least trouble in pairing them. They are kept in large out-door cages and the males pair directly they fly and will often mate with three females in one day. They appear to have three distinct flights—about mid-day, 4 p.m., and between 6 and 7 p.m.

“ *Quercus* do exactly the same in my cages, as also *trifolii* which emerge about 4 p.m., fly at dusk and pair at once, but I find the males knock themselves to pieces and are no good for pairing next day.

“ *Carpini* in cages is often a beast to pair. On some days the males pair readily on their first flight while on other days they hang about and won't pair at all. They will often pair with two females in a day, but they knock themselves about fearfully and seem no good after the first day. In the wild state, however, old worn males ‘assemble’ readily and pair with fresh females. Both *carpini* and *quercus* occur locally but not I think nearer than 1–2 miles from my garden, but if I put out virgin females on a tree I am nearly sure to find that wild males come, and pair at once on arrival.” *

The comparison of Mr. Newman's experience of *versicolor* with that of Commander J. J. Walker and Mr. A. H. Hamm, who failed to pair the bred males and females, leads to the conclusion that success was due to the flight of the males promoted by the large cages in the open air and light. It should be added that Mr. Hamm's bred females, although they failed to attract the bred males, were readily sought by wild ones.

As regards *carpini*, my friend Dr. R. C. L. Perkins, F.R.S., kindly informs me that when his son was “breeding Emperor Moths a few years ago some of the females certainly laid fertile eggs in the cages (large), though the moths were wanted as specimens, and none were left in the cages any great length of time.” Here too the cages are described as large.†

My friend Mr. K. G. Blair also informs me that, during the past summer, he entirely failed to pair the bred males and females of *trifolii*, but that a single bred male of *quercus* with deformed wings paired with a bred female of the same species. It was probable that the fluttering of this male, after the manner of deformed moths in their attempts to fly, was as effective as flight itself, in evoking susceptibility to female attraction.

Few entomologists can doubt that the attraction which leads to “assembling” is due to an air-borne odour and that it is recognised by the specialised antennae of the males. Fabre ‡ has written, in his fascinating style, on this subject, which he

* Mr. Newman informs me that his large breeding-cages measure about 15 ft. × 6 ft. and 3 ft. high, and that he seldom uses one smaller than 4 ft. × 3 ft. × 4 ft. —E.B.P., 6 Jan., 1928.

† Dr. Perkins tells me that the usual dimensions were, he thinks, about 2 ft. × 1 ft. × 1 ft., some cages being rather larger. Anything smaller was rarely used. They were covered with sheets of glass.—E.B.P., 6 Jan., 1928.

‡ *The Life of the Caterpillar*, chapters xii–xiv, Engl. translation by A. Teixeira de Mattos. Hodder and Stoughton, London.

studied in the night-flying males of *Saturnia pyri* ("The Great Peacock"), the day-flying males of *Saturnia carpini* ("The Lesser Peacock"), and *Lasiocampa quercus* (the "Banded Monk"). The "Clover Bombyx" (*trifolii*) did not attract males in his experience. His experiments and conclusions are summarised below.

Fabre cut off the antennae "near the base" of eight male *pyri* which had been attracted to a virgin female; six of these flew away, but one of them returned the next night to the female which had been removed to a new position about fifty yards distant. Twenty-four other males which arrived the same evening were similarly treated, but of the sixteen which flew away not one returned on the following night to the female in her renewed quarters where she was sought by seven males with antennae. The males which did not fly away were, Fabre believed, at the end of their active lives and about to die. Thus no antennaless male reappeared after the single example on the first night, and, when the experiment was repeated upon the males of *L. quercus*, not one returned to the female. As to the single positive result, it must be remembered that the male was liberated only fifty yards from the position of the female and that the portion of the antennae "near the base" may have borne some of the sensitive hairs. Besides, at this distance, it is possible, although I think unlikely, that other sense-organs may recognise the scent.

Fabre also marked fourteen "assembling" males of *pyri* by removing a patch of scales, leaving the antennae intact. All flew off, but only two of them, with eighteen unmarked males, sought the female in her new position.

Females of *pyri* and *quercus*, when placed under a glass cover sealed with putty or in a well-closed box of cardboard, wood, or metal, did not attract, but males assembled when the receptacles were cracked or imperfectly shut.

The female *quercus* did not attract males until the third day after emergence, but then and later they sought not only the female but the cage where she had been kept and any surface on which she had rested, indeed they often sought such surfaces and neglected the female, although she was near at hand. Porous substances retained the power longest, while metal, marble, and glass soon lost it. No solid or liquid secretion was seen by Fabre upon any attractive surface, but these experiments fully convinced him that the males were "assembled" by means of "an extremely subtle scent, imperceptible to our own organs of smell." He also tested the possibility of masking the scent of *pyri* by naphthalene and of *quercus* by many chemicals, but the males of both species "assembled" as before.

Fabre was, however, shaken in his conclusion that the attraction was due to a material scent by his single experience with *Saturnia carpini*, L., for all the males approached the female from the north although the wind was also from the north. He states that there had been for some days a violent north wind which had slackened but was still from the same quarter when the experiment was made. Exact meteorological observations are needed when the males "assemble" from one quarter and not from all as did the *quercus* males observed by him. It may be suggested as probable that the breeding-grounds of *carpini* lay to the north of the place where he exposed the female. Other naturalists have believed that males usually "assemble" against the wind, as we should expect, but precise records are required and, it is to be hoped, will be forthcoming.

Fabre was confirmed in his doubt by the area over which the attraction manifests itself. Thus he asks:—

“But what is materially emitted by the female *Bombyx* or Great Peacock? Nothing, according to our sense of smell. And this nothing is supposed, when the males congregate, to saturate an immense circle, several miles in radius, with its molecules! . . . However divisible matter may be, the mind refuses to accept such conclusions. It would be tantamount to reddening a lake with an atom of carmine, to filling immensity with nothing.” (*Ibid.*, p. 332.)

He suggests, as a solution of the mystery that the female *quercus* “does not emit molecules: it vibrates; it sets in motion waves capable of spreading to distances incompatible with a real diffusion of matter.” Physicists will, it is believed, be unable to accept this explanation of the facts, especially when it is applied to the transference of the attraction from the female to the objects she has touched. Moreover, a similar case could be made against the well-founded belief that substances such as musk are recognised by material particles which stimulate the human sense of smell. Furthermore, the “assembling” males have a great advantage over the higher Vertebrates which can only test a sample of air from time to time as they take it into their lungs. The male moths, on the other hand, are always combing the air with their antennae as they advance, both forward and from side to side, in the curious, irregular, but rapid flight which gives them every chance of detecting the thinnest layer and finest streamer or wisp of scent.

Fabre’s experiments on the conveyance of the attraction from the female to a surface with which she has been in contact have been repeated and his results thoroughly confirmed. Thus, my friend Mr. A. H. Hamm exposed a female *quercus* on 7 July, 1894, but failed to attract any males, as it was probably too early in the season. On 15 July, the satchel in which the female had been carried eight days before, was the centre of attraction to a number of males. (*Ent. Monthly Mag.*, Vol. 31, 1895, p. 74.)

Similar confirmation has been recently afforded by Mr. D. J. Carpenter of Belfast, who at the same time tested the effect of a closed receptacle. He has kindly sent me the following account of his observations:—

“10 November, 1927.—Two female *carpini* emerged from cocoons in my house last spring. One was placed in a small cardboard box with perforations of about 2 mms. diameter in the lid. The second was enclosed in a wooden, wire-gauze-covered box, wrapped up in brown paper. The former was carried in the breast pocket of my overcoat, and the latter in my hand. On arrival at the moor, both boxes were placed as they were, about two yards apart on the heather. Nothing happened. The brown paper was then removed from the gauze-covered box, and, in about a minute, 10–12 males were around. The small cardboard box was practically neglected although occasionally an odd male would hover around it. It being a bright sunny day my overcoat, having been first turned inside out, was thrown on the heather. One male would insist upon flying around and sometimes settling upon the breast pocket which had contained the cardboard box. The small box was never more than two or three yards away from the larger, better ventilated box, and I doubt whether its presence would have been detected at all if the larger one had been absent. In fact, the first half of the experiment seems to

prove it, for nothing happened until the brown paper was removed from the larger box."

Accepting, as we are I believe bound to do, the conclusion that the attraction is a scent perceived by the male antennae, we return to the problem stated at the outset. "Why should the males be insensitive to the attraction when fresh from the pupa, and, we may now add, until they have flown?" The solution is, I believe, to be found in the consideration of results which I owed to a letter written to me in January 1884 by the late Professor H. N. Moseley, F.R.S.

The far-reaching importance of the writer's observations as well as his generous treatment of a younger naturalist appear in the following passages which I venture to reprint * :—

"There is no need why anything should be said about my unpublished observations on the pupa. I cannot lay my hand even on my drawing now. If, however, you think fit you might mention that on your informing me of the line of work you had in hand I told you that I had observed that in *Saturnia carpini* the sheaths of the antennae in the female pupa are large, and inflated, with traces of pectination, resembling in this respect those of the male pupa, but in a reduced degree, although the antennae of the female imago are, as is well known, merely filiform. I concluded from this fact that in the ancestral SATURNIDAE the imagos of both sexes must have had large pectinated antennae, and that they had not been developed as such only in the male for sexual purposes, but must have been retained in the male and degenerated in the female. . . . I concluded . . . that probably members of the SATURNIDAE must exist with well-marked pectinated antennae in both sexes. I did not in the least know that such was the case, but soon saw that it is so on looking at Westwood's drawers of insects. . . . It was in 1871 that I began to look into the matter, but it was cut short by my expedition to Ceylon. . . ."

Prof. Moseley also suggested in this letter that the ancestral condition of other organs might be preserved indefinitely in the corresponding parts of certain pupae which require to be hard and rigid for the purpose of protection, it being "of no detriment to the development of the legs and the antennae of the imago that their pupa-cases are far too big and do not fit." The investigations subsequently undertaken confirmed these predictions. Although the shrinkage of a part in the imago may ultimately lead to the shrinkage of the corresponding part of the pupa the latter change keeps behind the former "so that an earlier condition of the imaginal organs can often be traced upon the pupa." (*Ibid.*, p. 246.)

The work described in the paper referred to above led to the conclusion that the males and females of "assembling" moths had developed in opposite directions—the males towards keener and keener sense-organs for the detection of the virgin females at greater and greater distances and stronger powers of flight to reach them in competition with other males, the females towards increase in the mass of eggs and a more and more complete sluggishness. Thus Weismann speaks of *Agria tau* as being one of the moths with females "unable to use their large wings for flight,

* From *Trans. Linn. Soc. Lond.*, 2nd ser., Zool., Vol. v, pt. 7, May 1891, pp. 245, 246. The investigations suggested by Prof. Moseley's letter are also published in this memoir.

because the body is too heavily weighted by a mass of eggs, all of which reach maturity at the same time. Such species . . . are unable to distribute their eggs over a wide area, but are obliged to lay them all in a single spot. They can, however, do this without harm to the species, because their caterpillars live upon forest trees, which produce abundant food. . . ." ("Essays upon Heredity, etc.," Oxford, 1889, pp. 17, 18.)

If, therefore, the "assembling" males emerged with their powers complete and ready for use they would of course at once detect and pair with any mature females of their own family close at hand, and the evolutionary history briefly summarised above would lead directly to inbreeding. That the males are not thus endowed until they have flown is obviously an adaptation which averts this very danger.* It is one of those absurdly simple interpretations which so often elude the inquirer, and one which has eluded me for forty years, although the work that I was doing in the early part of this period pointed directly to it!

The manner in which flight operates in promoting susceptibility to the scent, whether by an increased respiratory rhythm or otherwise, is a matter for future research; as also the nature of the change that is wrought. Our own experience would suggest that it is not any sense-organ—these remain as they were before—but some deep-seated part of the physiological sequence that is changed and responds in a new way to the old stimulus, and thus leads on to events which are essential for the preservation of the species.

The facts already stated show that this adaptation exists in LASIOCAMPIDAE, ENDROMIDAE, and SATURNIIDAE. It is probably restricted to certain species with "assembling" males and sluggish females laying their eggs in a limited area. Other adaptations securing the same end probably exist. Thus it is possible that the sexes are differently distributed in the batches of larvae which hatch intermittently from the eggs on the cocoon of *Orgyia antiqua*, or that the different rates of development of male and female larvae may achieve the same end in such species and the Geometers with flightless females, etc. The following note by Dr. R. C. L. Perkins suggests that male flight may be unnecessary for the pairing of *Poecilocampa populi*, the larvae of which occur singly. It is possible, however, that the active flight so soon after emergence from the pupa may quickly lead to susceptibility.

"21 November, 1927.—In the year when we were breeding *carpini* we also bred large numbers of the 'December Moth,' which, I take it, should be a good 'assembler.' These moths, if not moved very quickly after the development of their wings, are sure to beat about, and so were moved as soon as possible. We often found we could not leave them long enough to get really fit to kill—I mean for purposes of spreading the wings. I saw absolutely perfect specimens of these *in cop.*, and fertile eggs were laid all over the large cages. The flightless females of winter moths (various) also paired while quite fresh and laid good eggs. I have seen males of these assemble to a female, and also have read records of the same by others."

* Mr. Simmonds' statement that the female *bolina* appears to require a period of flight before pairing (p. 74) would also tend to reduce the dangers of inbreeding.

The adaptations which discourage inbreeding in insects with gregarious or densely distributed larvae are probably of various kinds and offer a fascinating subject for research. It must be borne in mind, however, that some of the species chosen for investigation may, like certain plants, have become immune to dangers which in others are only averted by means of special adaptations.

Mr. J. A. SIMES said that in 1925 he took a large number of wild larvae of *S. carpini* at Abriès, Hautes Alpes. These emerged partly in 1926, but mainly in 1927. In both years males and females emerged in the cage and were left there alive. In no case did a pairing take place. The females, however, deposited some numbers of infertile eggs. He concluded from this result that a period of flight on the part of the ♂ was essential to pairing.

EPINEPHELE JANIRA FROM IRELAND.—Mr. ALAN DRUITT exhibited specimens of *Epinephele janira* taken in July in the Cork district of Ireland, where the species is extremely abundant. These included a ♀ with the fulvous patch on the fore-wing much reduced; two ♀ with spots between the nervures below the subapical spot, a variation not found in many hundreds of specimens examined previously to 1927, although specimens with such spots on the underside are not uncommon; and a few with the band on the under wing partly fulvous.

As a rule the Irish race, as exemplified by specimens from County Cork, is larger and more richly coloured than the English and in pasture land is far more abundant. This may be attributable to a greater humidity and mildness in the atmosphere than occurs in England, which may favour the larva in the winter and tend to the production of larger imagoes and to a brighter coloration in the direction of fulvous.

ATTACKS BY BIRDS ON BUTTERFLIES.—Dr. H. ELTRINGHAM stated that he thought it desirable to place on record that in August last (1927) he had been watching fly-catchers in his garden and had seen an old bird catch a white butterfly, probably *P. rapae*, and after crushing it up gave it to a young one, which apparently swallowed it whole. The same old bird also caught a *Lycaena coridon* and apparently without removing the wings swallowed it. On another occasion, probably in 1925, he had seen fly-catchers knocking down white butterflies on to a tennis court. They did not eat them, but two chaffinches on the court ate some of the disabled insects. One of the fly-catchers showed marked individuality. It did not chase the butterfly, but swooped down on it from above like a hawk. It was much more successful than the others.

Papers.

The following papers were read :—

1. "British Tachinidae," by Mr. C. J. WAINWRIGHT.
 2. "Two collections of Butterflies from the South-east corner of the Sudan," by Dr. G. D. H. CARPENTER.
 3. "On the types of Oriental Carabidae described by V. de Motschulsky," by Mr. H. E. ANDREWS.
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Wednesday, December 7th, 1927.

Mr. J. E. COLLIN, President, in the Chair.

Nomination of Officers and Council for 1928-9.

The SECRETARY read the nominations of the Council for Officers and Council for 1928-9, for the second time.

Election of Fellow.

The following was elected a Fellow of the Society:—Professor A. JACOBI, Museen für Tierkunde und Völkerkunde, Dresden, Germany.

Exhibits.

NOTE UPON THE LARVA AND PUPA OF *BUNGALOTIS ASTYLOS*, CRAM. (LEPIDOPTERA, HESPERIIDAE).—Dr. S. A. NEAVE read the following communication from Mr. H. E. BOX from Tucuman, Argentina.

“I was greatly interested in reading an account by the Rev. A. Miles Moss in *Proc. Ent. Soc. Lond.*, vol. i (1927), p. 34, of the ‘terrifying attitude’ adopted by the pupa of *Bungalotis erythus*, a Hesperid which occurs in South America as a rarity in Peru, but is apparently common at Pará. As it is stated that the above record is somewhat unprecedented, such curiosities among the pupae of the HESPERIIDAE seemingly being unusual, there may be some interest attached to the following observations upon another South American species of the same genus.

“During 1922-24, when living at Blairmont, on the West bank of the River Berbice, British Guiana, I made a fairly large collection of the numerous kinds of Hesperid larvae to be found in that region. Practically all of my specimens were successfully reared to maturity, and the adults were determined for me through the kindness of Dr. G. A. K. Marshall. It is my intention to describe at an early date the early stages and habits of the thirty odd species which were studied at Blairmont, but meantime I would like to place on record the description of that which was easily the most bizarre of all the curious forms found.

“The adult of *B. astylos* was never seen in a state of nature at Blairmont, and I imagine it to be one of the rarer Hesperids of the locality. On one occasion only was the larva encountered, viz. March 8th, 1924, when a nearly fully-fed example was found in a folded leaf of a plant which I believe to be a species of *Cicca*, with large glabrous laurel-like leaves, and known locally as ‘sugar-bean.’ This was in a thick second-growth jungle forest, where most of my Hesperid larvae were collected.

“The larva, when found, measured 45-50 mm. according to expansion; it had the peculiar slug-like appearance common to several other Hesperid larvae, e.g. *Nascus phocus*, Cram., *Dysenius spurius*, Mab., etc., with a large broad ‘peaked’ head, and with the body widest at the mesothorax, tapering and flattening gradually and evenly towards the last abdominal segment. The body of the larva, like that of many others found, is covered with a white meal-like powdery material, but upon removal of this apparently protective covering is seen to be of a dirty greenish-white colour with numerous rows of dark greyish spots and small vague markings.

The head is extraordinary, being of a light lavender colour with several orange-coloured bars extending from the vertex towards the mouth-parts; the back of the head (as well as parts of the prothorax and the true legs) is black, as are the mandibles; the labrum, however, is glistening white.

"On March 25th the larva was found in its prepupal stage, when it measured 32 mm. The colour of the body (underneath its covering of white powder) was now uniform pale semi-transparent pink, with the dorsal vessel and its muscles showing dark greyish through the integument.

"The insect pupated on March 29th. The pupa was at first pale greenish in colour, later becoming uniformly dark castaneous. In shape it was the most remarkable Hesperid pupa I have seen, the head being drawn out in front to form a large (and apparently hollow) process reminiscent of that found among those curious FULGORIDAE of the genus *Laternaria*.

"I question the correctness of the application of the term 'terrifying' to the attitude assumed by the pupa of *Bungalotis erythus*, as well as that of the species I have just recorded, as these pupae are invariably found enclosed within folded leaves of the food-plant or nearby vegetation, and it seems to me doubtful whether the creature could benefit in any way by special form or structure when so effectively concealed from prowling eyes.

"It would be interesting if records of other *Bungalotis* pupae were brought to light, in order to see how far their appearance differs from the normal for the family, but the fact that two of them are known to be of abnormal design raises interesting speculations as to the causes that have brought about the phenomenon, as well as the reasons for it."

TESTS OF THE ABILITY OF *CHRYSOPHANUS DISPAR* TO WITHSTAND FLOODING.—Capt. E. B. PUREFOY gave the following account of his experiments.

"Twenty-eight larvae of *C. dispar batavus* were put on a dock pot towards the end of August. The pot ($6\frac{1}{4}$ inch internal diameter) contained plenty of tall dock leaves, sedge, rushes, etc., and was typical of a favourable hibernating plant in the marsh. Within a few days all the larvae had retired. The plant was placed in an empty bath in the open where it got its full share of sun, rain, etc., and was left quite undisturbed for about seven weeks. On October 24th rain water was introduced gradually until it reached half-way up the growth. On the following day the flood was increased until only about $2\frac{1}{2}$ inches of growth remained above water. The water was kept at this height until November 4th, *i.e.* 10 to 11 days, and then very gradually drawn off and the plant was left alone for several days until it was dry enough to examine.

"The examination of the plant was extremely slow and difficult owing to its condition, but all 28 larvae were accounted for, which was remarkable as there are generally a certain number of 'disappearances' when the larvae retire, from one cause or another.

"Details.

"Oct. 24th.—Plant flooded half-way up. Shortly afterwards four larvae were noticed walking on stems above flood-line. They remained exposed for a considerable time. A little later one larva was noticed floating on the water. They float very high on the surface and would certainly come to no harm for a consider-

able time. Probably in nature a breeze would blow one up to a rush, etc., and it could crawl up it. In this case the larva simply remained stationary and did not struggle at all. When it had been two hours on the water it was lifted to safety on to the plant and quickly crawled away to hiding.

"Oct. 25th.—The flood was increased until about $2\frac{1}{2}$ inches of growth remained above water-line only. After a time four more larvae were observed crawling upwards to safety.

"Oct. 26th.—2nd day of high flood, no fresh larvae were moving, and all those already woken up had disappeared into the meagre cover afforded by the $2\frac{1}{2}$ inches of growth.

"Oct. 27th and 28th.—3rd and 4th days of high flood. No change.

"Oct. 29th.—5th day of high flood. One larva floated up and remained for two hours on top of water, when it was rescued and put on plant.

"Oct. 30th.—6th day of high flood. No change.

"Oct. 31st.—7th day of high flood, at 1 p.m., one crawled up from below and found itself on an isolated spike without any cover. It remained there.

"Nov. 1st.—8th day of high flood, one crawled up another isolated spike and remained there.

"Nov. 2nd.—9th day of high flood. The isolated larva of Oct. 31st was joined by a second. The spike is very small and they jostle one another a bit, but remain safe above the water-line.

"Nov. 3rd.—10th day of high flood. The isolated larva of Nov. 1st deliberately crawled down its spike until it was $\frac{1}{2}$ inch below water. It remained thus for two hours, when it crawled up again to the highest point of the spike and remained there. One of the two larvae on the other isolated spike has got across about $\frac{3}{4}$ inch of open water on to other growth. I do not know how it managed it.

"Nov. 4th.—11th day of high flood. No change. Water drawn off very gradually.

"The result of the examination, which took place after an interval of three or four days, disclosed the fact that not less than 21 larvae out of the 28 had walked upwards above the flood-line and were all well hidden and quite safe. Four were found in position in their original hibernating leaves and do not appear to have moved at all, but it is impossible to say with certainty that they did not move. If they were 'tight,' as appears to be the case, they were 11 days under several inches of water. Two were found near the base of the plant and rather exposed, as if they had crawled out of hiding but had not crawled upwards. It was at once obvious that these two larvae were much too large, they were, in fact, waterlogged. They were only semi-conscious and hardly stirred when touched. They were placed on a dry leaf and kept under observation. They slowly lost their water and in the course of four days had shrunk to normal size. They crawled to the dark side of the dead leaf and are now hibernating in normal way.

"One larva was found dead in a leaf. It was dry and shrunk, and almost certainly had died before the flood.

"As I was leaving shortly, the flooding had to be done too early in the winter. It so happened that the temperature during all these days was unduly high, being from 8° to 10° above the normal for the time of year.

"On Nov. 3rd, the last whole day of deep flood, the mean shade temperature for the morning was 64° F.

“*Inference.*—Although the hibernating larvae will stand a great deal of flooding, it is obvious that the greater part of them will sooner or later endeavour to get above the water, and if they cannot do so will probably perish. In nature the great water-dock generally flowers and the flower spike persists strong and tall throughout the whole winter, a large part of it being well above the average fen flood. Perhaps this proves to be the salvation of a good many larvae. The larva which on Nov. 3rd voluntarily crawled down below the flood-line and remained thus for a considerable time was a very hopeful sign indeed. On the other hand, the two waterlogged larvae are an unpleasant fact. Had the flood lasted another two days it is improbable that they would have survived.”

AN ABNORMAL PUPA OF *PIERIS BRASSICAE*.—Mr. E. E. GREEN said :—

“The pupa in question was found, attached to a bramble leaf, in a country lane, far from any cabbage patch. As in most instances of pupation upon living leaves, this individual was of a translucent green colour, with the usual black markings reduced to a minimum. The abnormality—which was immediately apparent—is in the form of a moderately long, slender spine, taking the place of the stout conical process that normally occurs on each side of the body, near the outer angle of the wing-cover.

“The accompanying sketches illustrate the differences between this and a normal pupa of the species.”



NOTES ON *LATERNARIA* (FULGORIDAE) AND OTHER “LANTHORN-FLIES.”—Prof POULTON said that soon after the appearance of his communication on the terrifying aspect of *Laternaria* in *Proc. Ent. Soc. Lond.*, 1924, p. xliii, and Mr. W. E. China’s valuable notes on its supposed luminosity (*ibid.*, p. xlix), he had received the MS. of a short paper from the late Dr. A. G. Butler. This he had unfortunately mislaid for a time, but, having just recovered it, he now presented it to the Society together with some additional notes by other naturalists on this interesting genus. Dr. Butler’s paper is headed :—

“*The Luminosity of Lanthorn-flies.*”

“In October, 1866, I published a short article on this subject in a popular work then being published by Day & Son of Lincoln’s Inn Fields. In this article I noted that at a meeting of the Royal Physical Society of Edinburgh on the 27th

of April, 1859 [*Proceedings*, pp. 102, 103], Dr. J. A. Smith read a communication from a Mr. Alexander Henderson of Belize, in which he says:—"In answer to the question, "Is it really luminous?"", certainly, the fly possesses light, and therefore emits it. The light is evidently under control, for it increases and diminishes at pleasure. When the wings are closed there are three luminous spots[, one] on each side of the head-piece on the upper part (like a cat's staring eyes) of a beautiful sulphur-coloured light, in rays that spread over the room.'*

"If it is again assumed that the insect referred to was *Pyrophorus noctilucus* what shall be concluded respecting the *Hotinus candelarius* of China, respecting which an Austrian Officer, Count Christian Yedlety d'Enzenberg, told us in the old Insect-room of the British Museum that he had seen it shining brilliantly at night, and that one evening when strolling through the streets he observed a crowd of Chinese gathered round a house, a look of perplexity on each countenance; upon the wall above them was a brilliant greenish light. The Count, who was a practical man, took his walking-stick and knocked the object down, and, as he had expected, it turned out to be a 'flying candle.'

"The late Mr. Frederick Smith who, with myself, heard this story, told me that whilst looking over a box of Chinese insects, two sailors came up and one exclaimed to the other, pointing at *Hotinus candelarius*, 'See here, Tom, here's one of the flying candles that we used to catch in our hats along shore at night in China.' Mr. Smith then asked if they were sure that it shone at night. 'Well,' he replied, 'those we saw were just like this one, only they were red instead of yellow.' As is well known the insect is red when living, but after death the colour changes to yellow, which is clear enough evidence that these men were making no mistake as to the identity of the insect.

"As Mr. China evidently had not seen my little paper, I thought it might interest our Members to have these additional facts brought to their notice.

"ARTHUR G. BUTLER."

Mr. W. E. China kindly sent to me, 7 August, 1924, the following note on *Laternaria* made by Mr. E. Dukinfield Jones, who has spent many years in Brazil:—

"I have come across many specimens of these insects in Paraná, S.E. Brazil, and have carefully observed them with respect to their reputed luminosity, but I have never seen any suggestion of such luminosity."

Mr. China also wrote—"Mr. D. Jones corroborated the statement about the native superstitions and said that they screamed with terror when he handled specimens. He said that they thought the insect had a poisoned spine or point at the end of its head, and that it would fly at a man's chest and inflict a wound.

* Mr. W. E. China, who has kindly consulted Henderson's paper, points out that the omission of [one] in the above sentence entirely alters the meaning; also that the third spot is accounted for in the following sentence, omitted by Dr. Butler—"The third luminous spot is seen when the fly is on its back, half way down the abdominal part of the insect." Dr. Butler's punctuation is also somewhat different from the original in which moreover the word "head part" appears, not "head-piece." F. Smith in his Presidential Address (*Proc. Ent. Soc. Lond.*, 1863, pp. 201-209) also quotes Henderson's account inaccurately. Mr. China's corrections make it quite clear that, as he writes:—"the insect described by Henderson is not *Laternaria*, the large swollen head of which is supposed to be luminous. The spots, one on each side of the head on the upper part, and the abdominal spot are, of course, typical of the Elaterid beetle, *Pyrophorus noctilucus*."—E.B.P., 2 January, 1923.

Actually it is a very inactive creature and a weak flier. When disturbed on a tree-trunk it flies slowly and lazily to one near by."

My friend, Mr. Champion B. Russell, has also kindly sent me the following notes on the local beliefs about *Laternaria* :—

"1924, *September 2*.—I am afraid mine is the worst kind of hearsay evidence. I rather think that the Brazilian guide, who was with me when the *Laternaria* was given me, said that it was poisonous, and that the ship's doctor told me it was supposed to be luminous, and dreaded by the native Indians; while a Brazilian or Portuguese man who had a case full of strange insects, including 2 or 3 like my example, told me that they were supposed by the Indians to be blind, poisonous, and objects of dread."

"*September 27*.—A man just back from Bolivia brought 3 of the Fulgorids of which he gave me one. He says they are poisonous, and the Indians say they are luminous. The Indians say that any one they 'stab' dies. I asked him if he had ever been stabbed—'No!' Had he ever known any one else hurt by them. He said that one of his Indians had been; and that the arm had been very inflamed, but he had not died. This was the Indian's story. He says they are rare in his part of Bolivia."

The Bolivian specimen, kindly given to the Hope Collection, has, as Mr. C. B. Russell wrote, "apparently had its closed wings spiked by a bird just abaft the tail." The injury involves all four wings.

Dr. C. H. T. Townsend also kindly wrote from Piura, Peru, the following comment on the communication in our *Proceedings* for 1924, p. xliii :—

"1924, *September 25*.—I have little doubt that you have correctly interpreted the case of *Laternaria*. I have read (I think in Paul Fountain's book *Mountains and Forests of South America*—the book is not at hand) about monkeys being repeatedly seen to fall prey to alligators when coming down from the tree-tops to drink. I went up the Amazon at the height of the dry season and saw very few alligators on the entire trip. I believe they are confined to the back-waters at that time. I saw none in the inlets of Lake Tefé or anywhere in the vicinity during the two weeks I spent there.

"As to *Laternaria*, I have met with only one specimen in Brazil. It was sent to me from a point in the western part of São Paulo State. Thus I am unable to give any information of it in life. Bates's story of the nine men in the canoe and the *Laternaria* that flew out of the forest I enjoyed immensely. I had never heard it."

EXAMPLES OF MALE BUTTERFLIES DRINKING ON A ROAD IN UGANDA.—Prof. POULTON exhibited 9 Pierine butterflies and 1 Nymphaline, given to him by his friend Mr. B. B. Osmaston who had taken the specimens from various places in the car after a journey on 13 May, 1927, from Kampala to Mubende. He had been told, before the start, that there were swarms of butterflies on the road, and when he had reached a point, about half-way between the two places, they rose in such numbers at the approach of the car that they struck the wind-screen like the flakes in a snow-storm. There could be no doubt that they were drinking at puddles or moist places in the road, as is the habit of male butterflies, especially Pierines.

The species were as follows :—3 *Belenois severina*, Cram. (wet-season forms); 1 *B. subeida*, Feld.; 1 *B. solilucis*, Butl.; 2 *Pinacopteryx pigea*, Boisd.; 1 *Gluto-phrissa* (*Phrissura*) *epaphia*, Cram. (saba, F.); 1 *Terias senegalensis*, Boisd. (intermediate to wet); and a single Nymphaline, *Atella columbina*, Cram. As above stated all were males.

Dr. R. van Someren, M.D., who knows Uganda so intimately, had kindly given the following interesting account of similar congregations of butterflies :—

“1927, November 9.—The sight your friend saw is common in certain areas. I recall a place—my brother [Dr. V. G. L. van Someren] knows it well too—, at mile 13 on the Jinja-Elgon Road, where the track passes through a patch of forest and the ground is moist. Here one can see the butterflies, literally in hundreds, settled on the ground. In most places, as Mr. Osmaston found, the Whites predominate, but at this mile 13, the Nymphaline *Atella* was the commonest and so closely packed and intent on their meal that hundreds used to be crushed daily by motor vans. I have also seen that area covered with *Crenis*, and, if one sat close by, they would settle in numbers on one's hands apparently attracted by the moisture of perspiration. *Papilio nireus* and *bromius*, *menestheus lormieri* and even *dardanus* would settle in closely packed numbers, while Blues of various sorts were uncountable, and, as leopard droppings were often numerous at that particular spot, *Charaxes* of various sorts, chiefly *eupale*, were also there in numbers. It was really an extraordinary sight, and the butterflies were so intent on the moisture that one could easily pick them off by hand. It is no doubt the moisture, probably contaminated with the leopard dung, which made this such a favourite spot. In most places, however, the Whites predominate. I have often taken interested visitors to see this particular spot, as in all my wanderings in Uganda I had never met a place where so many varied kinds could be met with. I've often regretted since that I never took a photograph of it. We have even captured *Euranthe* there on the ground and they were not common in Busoga.”

AN UNUSUALLY LARGE *ACRAEA* FROM THE CAPE TOWN DISTRICT.—Prof. POULTON also exhibited a male of *Acraea anacreon*, Trim., taken by Mr. B. B. Osmaston, in November 1926, at a spot he cannot now remember, but certainly within five miles of Cape Town. The butterfly, with fore-wing measuring 34.0 mm. from base to apex, is far larger than any in the long series in the Hope Collection, although the British Museum possesses a male taken by Dr. G. A. K. Marshall at Karkloof, Natal, with F.W. measuring 35.0 mm.; also, from “E. Transvaal,” a male—34.0 mm., and a female—35.0 mm.

It was possible, as the only example taken by Mr. Osmaston was unusually large, that the local form in the Cape Town district is of greater size than in most parts of Africa where the species exists.

Kind help in the study of Mr. Osmaston's material was afforded by my friends Dr. F. A. Dixey, Dr. H. Eltringham and Capt. N. D. Riley.

SOME ENEMIES OF BUTTERFLIES IN THE TANGA DISTRICT, E. AFRICA.—Prof. POULTON showed the following specimens sent from Amani for exhibition at a meeting of the Society, by his friend Mr. C. B. Williams.

The larva of a Pentatomid bug, sucking the Nymphaline butterfly *Eurytela*

dryope, Cram., ♀. The small size of the bug as compared with its victim suggests that the butterfly was overcome by an injected poison. The specimens were observed at Zigi, near Amani, 9 July, 1927. The larva was considered by Mr. W. E. China to be probably a species of *Afrius* (ASOPINAE).

The Thomisid spider and Hesperid butterfly, *Sarangesa subalbicans*, Beth.-Bak., ♂, referred to in the following extract from Mr. Williams' letter written at Amani:—

"1927, November 3.—An interesting thing that I came across this morning was a Skipper butterfly in the embraces of a bright yellow spider on a flower of Cassia of exactly the same colour as the spider. Do such spiders grow up yellow by nature and search for yellow spots on which to sit, or do they change to the colour of their surroundings?"

Other examples of E. African Thomisid spiders with colours resembling those of the flowers in which they were found were recorded by Dr. V. G. L. van Someren and Mr. A. Loveridge in *Proc. Ent. Soc. Lond.*, 1924, pp. xxxix-xli. There was little doubt that these spiders have the power, possessed by so many caterpillars, of adjusting their colours to those of the flowers they frequent. Exact experiments were much needed.

A NEW LYCAENID FROM SPAIN.—Brig.-General B. H. COOKE exhibited specimens of a new Lycaenid of the genus *Zizera* (*Cupido*), taken by him in the Sierra de Espuña near Murcia in April and May 1927. The species has been fully described under the name of *Cupido arcilacis* by Captain N. D. Riley in the *Entomologist* of December 1927.

The first specimens were taken on 24th April in a dry stony watercourse at altitudes between 3600 and 4100 feet. They were fairly plentiful and were still flying, though worn, at the end of May. Mr. Morris Carswell, a resident of Murcia, had submitted some specimens to a well-known Spanish entomologist, who had declared them to be *C. lorquini*. This was obviously incorrect, as the males were black or very dark brown on the upperside. The exhibitor therefore sent some of the specimens he had taken to the British Museum for identification.

The Sierra de Espuña was, it seems, almost bare of trees and other vegetation until about thirty years ago. Since then it has been gradually re-afforested by the Spanish Government, with the result that many species of insects are gradually establishing themselves there. The Sierra has not, however, been much explored until recently from the entomological point of view.

General Cooke also exhibited specimens of *C. minimus* from the Pyrenees, *C. lorquini* from the Sierra de Alfacar and *C. sebrus* from the Basses Alpes and Alpes Maritimes for comparison with the new species.

THE HABITS OF *OECOPHYLLA SMARAGDINA*.—Major R. W. G. HINGSTON gave the following account of the habits of *Oecophylla smaragdina*, the tropical red tree-ant, illustrated with lantern slides.

The nest is a conspicuous object on trees. It is made of leaves drawn together with their edges united by silk. It is usually somewhat globular or pear-shaped with an opening at one end. A small one may be the size of two fists; a large one as big as a man's head. The interior is divided into compartments by leaves or

partitions of silk. In these compartments we find the following: (a) Masses of workers. (b) Eggs, larvae and pupae indiscriminately mixed together. (c) Sexual forms, males and queens. (d) Ant cattle stabled on the leaves. (e) Dead insects of all orders which the ants have dragged inside.

The byres are smaller structures, like miniature nests, usually lower down on the tree. The shape is generally ovoid or pyriform. Inside them are found workers, cattle and dead insects. They do not contain eggs or larvae. As a rule they are made of about three or four leaves. If leaves are not available, the ants make their byres exclusively of silk.

In making a nest the ants select a cluster of leaves. They pull them together by the following method. Ants stretch across the gap between two leaves. They catch the edge of one with their mandibles, of the other with their hind legs. If the gap is too wide for a single ant to bridge, then two, three, or more will link themselves together by catching one another's waists. They then all pull together, lying side by side parallel to one another and hauling in a common team. As a result the edges come closer and finally are made to meet. Then follows the stitching operation. While the ants hold the leaves together, another ant appears with a larva which it employs for generating silk. It holds the larva in its jaws, applies it to the approximated edges of the leaves, and, wherever the larva is made to touch the leaf, it fixes a thread of silk. The ant lifts it from side to side, touching first one leaf, then the opposite leaf, in a regularly rhythmical manner. The larva seems to co-operate with the ant, and bends its head to make an attachment when the ant brings it towards the leaf. The threads are invisible to the naked eye, but are easily seen with a strong lens. The ant's jaws are adapted for holding the larva. Being particularly long and sickle-shaped, they encircle its body in a kind of ring.

Sometimes a byre is made from one leaf. The leaf is bent on itself by its apex being pulled down to its base. This is done in the following manner. An ant gets hold of the tip of the leaf. A second ant grips its waist. A third ant grips the waist of number two. A fourth ant grips number three; and so on, until they make a chain which extends down along the midrib of the leaf. Then all in the chain pull together, and as a result the tip bends. When the tip of the leaf turns over a little, other ants catch hold of the turned-over tip. Some pull as individuals, others make chains. All haul together and in fifteen minutes they have the tip of a mango leaf bent right down to its base. Then another ant arrives with a larva and stitches the edges of the doubled-over leaf.

Insects of all orders are captured and dragged into the nest. The following mode of capture is employed. An ant finds an insect, grips it anywhere, hangs on and tries to hold it down. Other ants see the contest, rush in and also hang on. More and more come until the insect's escape is checked. Then the ants proceed to stretch their capture. They gather round it, seize projecting points, arrange themselves like the spokes of a wheel, and proceed to pull with all their strength. They haul in opposite directions, against one another; they never for an instant relax the strain until the capture is quite dead. The number that engage in the stretching depends on the size of the creature to be stretched. Eight will stretch an ant the same size as themselves. Twenty will stretch a small ladybird, thirty a medium-sized Longicorn beetle. Hundreds were seen stretching a young bird

which they killed and carried piecemeal to the nest. The time taken to kill by stretching also varies with the size of the capture. A large ant is killed in five or six minutes. A medium-sized Longicorn beetle is not killed under half an hour. In small insects the stretching kills by the physical strain on the nervous apparatus. In large insects a process of poisoning is added. The straining opens the insect's joints, for instance the clefts between thorax and abdomen and the articulations of the legs. When these weak spots are opened the ants come forward and squirt poison into the clefts. Thus the larger captures are killed by a process of poisoning plus stretching.

Having killed the insect, most of the stretching ants retire. Sufficient remain to carry it away. In this act they show much prudence. They have to pull it up the tree, and, when doing so, they arrange themselves to best advantage. Most of them get on the upperside of it. Just a few hold on to it below. The crowd above drag it upward. The few below just steady it and prevent it swinging about. If it gets stuck, other ants join in, haul it out of the difficult situation, and withdraw as soon as it is again on the move.

These ants also keep cattle. They are stabled on the leaves in both nests and byres. A very common one is *Lecanium hesperidum*, a disc-shaped Coccid not much bigger than the head of a large pin. Immense herds of these are kept, usually along the midribs or at the base of the leaves. In the byres they are found at all stages of development and overlap one another like scattered coins. The herd is often very congested. Two hundred and fifty were counted on one square inch of leaf. The ants get their herds in two ways. One way is to find Coccids in the foliage and imprison them by stitching the vegetation round them. The other way is to catch hold of the Coccids and carry them off to the nest or byres. Caterpillars of the butterfly *Zesius chrysomallus* are also kept by these ants in their nests. The ants care for them and carry them about. The caterpillar dies if removed from the ants.

The workers are very pugnacious. If their nest is disturbed they pour out in thousands, rush down the branches, drop from the foliage, and in a minute one's body is covered with ants. They attack the skin, cut it with their jaws, then squirt poison into the wound. Also they shoot poison through the air which smarts severely if it gets in the eyes. The attack is tremendously effective, and the intruder is forced to retire. It is fierce enough to protect the ants even from the largest mammals. When the ant squirts its poison into a wound its method is to bring its abdomen over its back and shoot the poison downward in front of its jaws from where it flows into the wound. Its peculiarly elongated pedicle is specially adapted to this act.

Most ants communicate danger by touch; this ant does so by means of sight. Its vision is remarkably good. When it is alarmed it stands still, gets into an alarm attitude, with head and thorax raised from the leaf and antennae thrust up into the air. Then it proceeds to make jerking movements, vibrates its antennae, flicks its abdomen. Another ant sees the attitude and jerkings. It proceeds to do the same. A third ant follows, then a fourth, and the news spreads through the whole nest.

This ant can make a noise. If the leaves of a nest happen to be dry and the ants get suddenly alarmed, a fine tapping noise will sometimes be heard. What

happens is that the ants on the outside of the nest, when flicking their abdomens up and down, make a sharp tap on the nest-wall. The purpose of this is to spread alarm. The sentries on the outside by this tapping operation communicate with the ants in the interior, which latter, when they hear the tapping, come pouring out of the nest.

These ants are skilful in bridging spaces. Being elongated they can stretch a fair distance, but if one ant is unable to reach across a gap, then it gets hold of another by the waist and pushes the second ant out in front of it, by which means it almost doubles the length. Wider spaces are bridged by chains of ants which link themselves by holding one another's waists. One bridge was carefully observed. It was formed by a single ant, which bridged a gap between two leaves. Hundreds of ants were seen every minute crossing over this self-constituted bridge. The bridging ant was watched for half an hour, during which time it never moved. It was then taken away. Some confusion followed. But another ant soon replaced it, and the stream continued to cross over.

A nest together with some neighbouring leaves was removed from a mango tree. The nest had a long stem. The stem was placed in a bottle, and the bottle was put standing in a basin of water. The nest in consequence became an island. The ants tried to escape from their island and explored the nest, the leaves and the bottle. Soon they collected on one leaf the tip of which stretched out beyond the basin to within about two inches of the ground. From the leaf they stretched down towards the ground and it seemed as if they were going to drop. But soon they began to make a ladder. One ant hung to the leaf with its hind legs, a second climbed down and hung on to it, a third hung on to the second, a fourth to the third until a string was formed which reached to the ground. At first it was fragile, but other ants gathered round it and thickened it, until it became a kind of rope. Down this ladder the other ants descended, and the greater part of the community escaped.

Mr. DONISTHORPE congratulated Major HINGSTON on his most interesting lecture and made the following remarks on the subject :—

“So far as I am aware the first mention of these nests in the literature is to be found in Captain Cook's *Voyages*. In 1770 he observed the nests of the Australian subspecies—*Oecophylla virescens*, which possesses a green instead of a red worker—in the branches of the mangroves in N. Queensland. This, of course, only referred to the nests, and not how they were constructed.

“One frequently finds that the credit of the discovery of the interesting habits of these ants, in using their larvae to spin silk to fasten together the leaves of which their nests are constructed, is given to Doflein. This, however, is by no means the case; it was first discovered by Ridley at Singapore in 1890. He was followed by Saville Kent, in Australia, in 1891. Next came Mr. Green, in Ceylon, in 1896. All three of these observers made the discovery independently, without knowing about the work done by the others.

“Dodd in 1902 confirmed Saville Kent's observations in Australia and added to the knowledge of the habits of *O. virescens*. Then came Doflein in 1905, who studied the habits of *O. smaragdina* in Penang. He published some good figures, which are usually reproduced in the text-books on the subject.

“An interesting point in connection with the fact that these ants possess a

very long petiole, by which they are grasped by their fellows when they form chains and bridges, is that it has been suggested to be an adaptation to this habit. This theory is perhaps strengthened by the fact that the species of *Oecophylla* of the Baltic Amber, and I may add those fossil specimens which I found in the Gurnet Bay deposits in the I. of Wight, have a considerably shorter petiole than the species of *Oecophylla* existing at the present time. The young queens of these ants, when they found a colony, shelter themselves in a curled leaf, and when their first eggs hatch, they use the young larvae to spin together a few leaves to start a small nest.

"Mr. Green discovered that unlike most of the species of FORMICINAE, the larvae of *Oecophylla* do not construct cocoons, and he, perhaps naturally, concluded that this was because these larvae had used up all their silk in constructing, and mending, nests. This, however, is not entirely the case, for in the genus *Polyrhachis* in which the larvae are also used to spin, they nearly always construct cocoons.

"There are three separate genera in the subfamily FORMICINAE which use their larvae to spin together leaves, etc.—*Oecophylla*, *Polyrhachis*, and a few species of *Camponotus*. Goeldi discovered a species in Brazil with those habits, and Wheeler another in Guatamala. Forel, however, recorded that Jacobson found small silken nests in Java which had been spun by the larvae of a *Technomyrmex*! This being the case, we have the remarkable fact that four different genera, one being in a different subfamily—the DOLICHODERINAE, have separately evolved these very interesting habits."

ANNUAL MEETING.

Wednesday, January 18th, 1928.

Mr. J. E. COLLIN, President, in the Chair.

Dr. S. A. NEAVE, one of the Secretaries, read the following

Report of the Council.

The Council reports that the various activities of the Society have been somewhat restricted owing to the situation arising out of the Income Tax question, especially as explained later, in respect of the publications. This point, however, as well as the financial position will be dealt with in the Report of the Treasurer.

Since the last Annual Meeting the following 13 Fellows have died, or their deaths have been ascertained :—

E. W. ADAIR, A. BERLESE (Hon. Fellow), S. A. BLENKARN, G. C. CHAMPION, Sir G. T. GILBERT-CARTER, L. GREENING, T. F. P. HOAR, J. H. HODSON, J. J. LISTER, Sir J. T. D. LLEWELLYN, D. PEARSON, G. T. PORRITT, and J. W. YERBURY.

The following 13 Fellows have resigned :—

W. C. CRAWLEY, R. S. McH. GORDON, J. C. HALL, Rev. N. JONES, R. S. LOWER, L. MEADEN, R. S. MITFORD, Lt.-Col. H. D. PEILE, D. PRICE, F. RHODES, T. A. G. STRICKLAND, E. B. WATSON, and H. E. WINNER.

The following have been removed from the List of Fellows in accordance with the Bye-Laws, Chap. XV, sec. 3 :—

D. ALLEN, C. F. C. CARPENTER, C. DOVER, P. V. ISAACS, and P. SUSAINATHAN.

During the year 36 Ordinary Fellows have been elected, but these additions to the List are set off to some extent by the losses detailed above amounting to 31. The total number of Fellows now constitutes a record, amounting to 719, and the Society now consists of 11 Honorary, 3 Special Life, and 705 Ordinary Fellows.

The publication of the 2nd volumes of the Society's *Transactions* and *Proceedings* in their new form has been continued. The two Parts of the *Transactions* were published on July 18th (Part I) and December 31st (Part II), on which dates copies were on sale at the Society's rooms. The funds available, owing to the necessity of setting aside a considerable sum of money to meet a probable income-tax liability, were very much smaller than in 1926. Consequently a number of papers had to be rejected, others held over and the size of the volume reduced by over 120 pages to a total of 340 pages. Twenty-five papers by the following authors were published :—

K. G. BLAIR, 2; Dr. E. A. COCKAYNE, 2; Miss L. E. CHEESMAN, 1; T. ESAKI and W. E. CHINA, 1; Dr. H. ELTRINGHAM, 1; S. M. FEDOROV, 1; Dr. R. A. FISHER, 1; Mrs. O. A. MERRITT-HAWKES and T. F. MARRINER, 1; Major R. W. G. HINGSTON, 1; Dr. V. LALLEMAND, 1; Dr. G. A. K. MARSHALL, 1; A. PHILPOTT, 2; Miss PROUT, 1; L. B. PROUT, 1; O. W. RICHARDS, 1; N. D. RILEY, 1; T. V. SUBRAMANIAN, 1; W. H. THORPE, 1; Dr. R. J. TILLYARD, 1; Dr. A. J. TURNER, 1; D. S. WILKINSON, 1; C. B. WILLIAMS, 1.

Of these 10 deal with Lepidoptera, 3 each with Coleoptera and Hymenoptera,

2 each with Orthoptera and Hemiptera, 1 each with Diptera and Strepsiptera, and 3 are of a general character or concern more than one order.

The volume is illustrated with 27 black and white plates of which 16 are half-tone, the remainder line-block. Mr. J. J. JOICEY kindly defrayed the cost of the plates accompanying the papers by Miss A. E. PROUT and Mr. L. B. PROUT, Dr. E. A. COCKAYNE the cost of the plate illustrating his paper in Part I, and the cost of Plate XXVII was met from the income derived from the Westwood Bequest.

The *Proceedings* will be larger than those for 1926 and will comprise 94 pages illustrated by a few text-figures.

The detailed work of the Society's business has been carried on by a Finance and Housing Committee under the Chairmanship of Mr. R. W. LLOYD, a Publications Committee under that of Dr. K. JORDAN, and a Library Committee under that of Dr. E. A. COCKAYNE. The thanks of the Council are again due to the Fellows serving on these Committees for their valuable services.

The Meetings of the Society have again been well attended, the average number present at each having been 64.

The HON. LIBRARIAN reports that the fund available for the Library in 1927 was considerably less than in the previous year; consequently the purchase of new books was curtailed. The binding is still in arrear and necessitates an outlay beyond the usual annual amount for the binding of journals. Early in the year Mr. R. W. LLOYD very kindly gave a donation which enabled the Council to purchase a large number of the entomological parts of *Archiv. fur Naturgeschichte*, a zoological journal much in request by Fellows. More than 400 items have been sent out on loan, an increase of over 30 per cent. on last year. Besides this, many inquiries are made for Separates and works not in the Library. When funds are available, attempts are made to obtain these.

The HON. SECRETARY of the Committee for the Protection of British Lepidoptera reports that the unfavourable season has rather interfered with the progress which was being made in establishing new colonies of certain species. Information was received that *Melitaea athalia* is now firmly established in certain woods in the South-Eastern Counties in which it had not previously occurred.

The bad weather has rather interfered with the observation of the colony of *Melitaea cinxia* in Sussex. The colony of *Chrysophanus dispar rutilus* in Norfolk survived the winter, and a number of pairings must have taken place, as larvae were observed on the Water-docks in August last.

A very determined effort was made to obtain more larvae of *Chrysophanus dispar batavus*. Capt. E. B. Purefoy went to Holland and succeeded in obtaining a few more larvae to add to those he had already hibernated. The resulting imagines were released in Wood Walton Fen on the prepared terrain, and several pairings were observed. Some of the females were caught up and a large stock of ova was obtained, the females being again released to finish their laying in the fen. A considerable number of larvae is being hibernated in confinement as some of the wild ones in the Fen may not survive the floods and frost which they are undergoing this winter. It is hoped that full details of this experiment will form the subject of a paper later on.

The Report was adopted on the motion of the Rev. G. WHEELER, seconded by Mr. C. J. WAINWRIGHT.

The Treasurer's Report.

The TREASURER then read the following Report :—

The year that has just run its course has been one of steady progress from a financial point of view, and one in which all reasonable anticipations have been realised.

The New Meeting Room Fund now stands at £2,591 1s. 3d., which is rather more than the amount I estimated it should reach at this date.

I am glad to be able to report that the result of the sales of Publications in 1927 is much more satisfactory than in the previous year, the increase amounting to the sum of £192 8s. 3d.

The amount spent on Publications was £1,129 19s. 6d., an increase of £608 11s. 4d. over the sum spent in 1926. This large increase is accounted for by the additional matter that was paid for in the financial year, largely in respect of 1926.

The amount available for new books was considerably less than in 1926, £119 14s. 1d. as against £151 0s. 8d. This Fund would have been still less but for a very welcome donation from Mr. R. W. LLOYD.

The amount required for repairs to premises, namely £17 18s. 3d., was again very low.

A bequest of £200 was left to the Society by its late Fellow, the Rev. F. D. MORICE.

In addition to the contributions to the cost of papers in the *Transactions* alluded to in the Council's report, the Society received during the year the sum of £40 16s. 0d. through Professor E. B. POULTON, being the cost of Messrs. HAMM and RICHARDS' paper in the *Transactions* for 1926. The best thanks of the Society are due to these Fellows for their generosity.

The Council is taking all steps that appear possible to obtain the relief from Income Tax which has been its privilege hitherto. The Test cases alluded to in my Report a year ago have not yet been decided, and at this moment it is not possible to say anything definite on the subject.

An important step has recently been taken by the Council in connection with the formation of the New Meeting Room, by the appointment of an architect who is experienced in the science of acoustics, and who I feel confident will be able to design us a meeting-room that will be satisfactory from this most important point of view. It is intended that the final plans shall be prepared, and all other steps taken during the present year, so that a start can be made with the building operations early in 1929.

I am glad to be able to report a considerable increase in the number of Fellows who in 1927 paid their subscriptions through their Bankers, to the Society's Bankers direct, instead of sending them to the Society; there are still, however, about 300 Fellows who have not yet availed themselves of the advantages of this method. A great proportion of these reside abroad, and apparently for that reason are not aware that they can secure the advantages alluded to in my last Report. To these Fellows I would point out that a Fellow resident outside the British Islands has only to get his local Bank to arrange with its London agents to pay the subscription annually on the 1st January to the Society's Bankers. Of course all Foreign Banks have London agents.

The Report and Accounts were adopted on the motion of Dr. K. JORDAN, seconded by Mr. R. W. LLOYD.

It was announced from the Chair that the Fellows, nominated as Officers and Council for the ensuing year had been duly elected in accordance with the Bye-laws.

The PRESIDENT then read his Address on "The Recent Growth of Interest in Entomological Science and its Effect upon Entomologists and Entomological Societies," and at its conclusion a vote of thanks to him, coupled with the request that it might be printed in the *Proceedings*, was moved by Mr. E. E. GREEN, seconded by Mr. R. ADKIN, and carried unanimously.

A vote of thanks to the Officers for their services was then passed on the motion of Sir T. HUDSON-BEARE, seconded by Mr. H. MAIN, and Mr. W. G. SHELDON, Dr. S. A. NEAVE, and Mr. N. D. RILEY briefly replied.

STATEMENT OF ASSETS AND LIABILITIES—DECEMBER 31, 1927.

ASSETS.			LIABILITIES.		
	£	s. d.	£	s. d.	
To Freehold Premises, 41 Queen's Gate, S.W.,			By Amounts due from Society—		
Cost of Purchase	...	6,250 0 0	Printing <i>Transactions</i> Parts II and III	358 12 7	
" Library, Furniture and Fittings	...		Sundry Accounts	375 7 4	
" Present Value of—	...	Not valued.*	Subscriptions received in advance	39 11 0	773 10 11
£1354 2s. 2d. Consols (Compounding Fund—					
Cost £1233 3s.)	751 10 7		" Excess of Assets over Liabilities—		
£939 13s. National War Bonds, 1928 (Com-			General Account	634 1 4	
pounding Fund—Cost £710 7s. 0d.)	745 2 7		Housing Fund	6,250 0 0	
£239 12s. 4d. Birmingham Corporation 3%			New Meeting Room Fund	2,591 1 3	
Stock, 1947 (Westwood Bequest—Cost			Compounding Fund	1,557 4 2	
£250) ...	150 19 2		Westwood Bequest Fund	151 13 6	
£2404 2s. 3d. National War Bonds, 1929			Library Fund	7 9 4	
(New Meeting Room Fund—Cost £2536 6s.			Hamilton Druce Bequest Fund	953 6 6	
1d.) ...	2,524 6 5		Repairs to Premises Fund	93 9 9	
£1095 15s. 6d. New Zealand 4% Stock, 1943—					12,238 5 10
63 (Hamilton Druce Bequest Fund—Cost					
£1000) ...	953 6 6	5,125 5 3			
" Amounts due to the Society—					
Subscriptions	92 2 9				
Admission Fees	15 15 0				
Publications	10 6 6				
Rents and Contributions to House Expenses	137 10 0				
Sundries	24 13 3				
Less—	280 7 6				
Not considered good	25 0 0	255 7 6			
Cash at Bank and in Hand—					
General Account:					
Current Account	356 1 9				
Deposit Account	817 0 0				
	1,173 1 9				
Cash in Hand	3 3 1				
New Meeting Room Fund—Current Account	66 14 10				
Compounding Fund—Current Account	50 8 0				
Repairs to Premises Fund—Current Account	93 9 9				
	1,386 17 5				
Less Library Fund—Current Account (over-					
drawn)	5 13 5	1,381 4 0			
		£13,011 16 9			
					£13,011 16 9

* Estimated by Treasurer to be worth £5,000.

NEW MEETING ROOM FUND.

	£	s.	d.		£	s.	d.
To Receipts to 1926 ...	...	1,618	3 0	By Amounts invested to 1926	...	1,576	6 1
" " in 1927 ...	...	984	17 11	" " in 1927	...	960	0 0
				" Balance at Bank at date	...	...	2,536 6 1
							66 14 10
							<u>£2,603 0 11</u>

COMPOUNDING FUND.

	£	s.	d.		£	s.	d.
To Balance at Bank as per last Account ...	...	45	6 11	By Investment in £42 10s. 0d. 5% National War Bonds 1928	...	...	...
" One half Admission Fees received in 1927	...	50	8 0	" Balance at Bank at date	...	...	...
							<u>£95 14 11</u>

WESTWOOD BEQUEST FUND.

	£	s.	d.		£	s.	d.
To Balance at Bank as per last Account ...	...	14	7 4	By Part cost of Plates	...	...	...
" Interest on £239 12s. 4d. Birmingham 3% Stock	...	6	9 4				
							<u>£20 16 8</u>

LIBRARY FUND.

	£	s.	d.		£	s.	d.
To Balance at Bank as per last Account ...	...	5	11 10	By Expenditure on new Books	...	...	...
" Interest—Hamilton Druce Bequest	...	39	8 11				
" Transfer from General Account	...	14	5 4				
" One half Admission Fees received in 1927	...	50	8 0				
" Donation—R. W. Lloyd, Esq.	...	10	0 0				
" Balance of Bank Account overdrawn at date	...	5	13 5				
							<u>£125 7 6</u>

REPAIRS TO PREMISES FUND.

	£	s.	d.		£	s.	d.
To Balance at Bank per last Account	...	41	8 0	By Payments for Repairs to Premises	...	...	...
" Amount transferred from General Account	...	70	0 0	" Balance at Bank at date	...	...	...
							<u>£111 8 0</u>

W. G. SHELDON, *Treasurer.*

We have audited the Treasurer's Accounts of Receipts and Payments and the Statement of Assets and Liabilities with the Books and Vouchers of the Society and certify them to be correct. The Solicitors have certified to us that they hold the Deeds of 41 Queen's Gate for safe custody on behalf of the Society and we have verified the other Investments and Bank balances.

W. B. KEEN & Co., *Chartered Accountants*

23, Queen Victoria Street, London, E.C. 4.
January 13th, 1928.

THE PRESIDENT'S ADDRESS.

LADIES AND GENTLEMEN,

The Report of the Council and the Treasurer's Report have given you a very good idea of the activities of the Society during the past year and its present position compared with that of twelve months ago. You may well consider that the continued successful progress of the Society is a matter upon which the Council and Committees are to be congratulated, but no small measure of that success is due to the loyal support of those Fellows attending our meetings and taking part in the proceedings, while few outside the Council know how great a proportion of that success is the result of the unremitting attention on the part of the permanent Officers (Treasurer, Secretaries and Librarian) to the multitudinous details of the Society's affairs, and the zeal with which they carry out their honorary duties.

The Society has lost by death in the past year one Honorary, one Special Life and eleven other Fellows. It is impossible, in the brief notices which I am able to give of these Fellows, to deal adequately with their scientific attainments or to recall their personalities more than imperfectly. Each of them will leave behind to some of us the memory of a helpful colleague, a genial companion, or a loyal comrade, while those who have achieved distinction in their work will have raised lasting monuments to their own memory that may well prove landmarks to future generations.

I was personally well acquainted with only three of these Fellows—Porritt, Champion and Yerbury. They were more or less veterans of the Society at the date when I became a Fellow, and I do not suppose I am alone in having cause to be grateful to them, while a novice, for much helpful advice, friendly encouragement, and later—loyal co-operation, in matters Entomological. I am much indebted to the Officers of the Society, Prof. E. B. Poulton, Mr. H. M. Hallett and Mr. E. C. Bedwell for information concerning those deceased Fellows less well known to me.

The vacancy in our list of Honorary Fellows has been caused by the death of PROF. ANTONIO BERLESE, Director of the Station for Agricultural Entomology at Florence and a very noted Italian Zoologist with an extensive knowledge of applied Entomology, a specialist in the anatomy and biology of insects and an authority upon the Acarina. He was elected an Honorary Fellow of our Society in 1915.

LT.-COL. JOHN WILLIAM YERBURY, who joined the Society in 1888 and was elected a Special Life Fellow in 1916, passed away on November 10th, 1927, as the result of an accident from being knocked down by a passing motor-car. Born in 1847 at Serampore in Bengal, he was the son of Lt.-Col. J. W. Yerbury of the 3rd King's Own Light Dragoons, and afterwards of Belcombe, Bradford-on-Avon. Obtaining a commission in the Royal Artillery in 1868, he served in India, Aden and other parts of the world until his retirement in 1892. Always more interested

in Natural History than in soldiering, he, while stationed at Aden, started upon an exhaustive study of the fauna of that district, especially in regard to the birds and insects. He even returned to this inhospitable spot (I believe sometimes spoken of as "Hell upon earth") in 1895, after his retirement from the Army, in order to complete his self-appointed task. The results were subsequently published in *The Ibis*, the *Journal of the Bombay Natural History Society*, our own *Transactions*, and elsewhere, and constituted an important addition to our knowledge of the Fauna of that region.

On returning to England he became interested in the Diptera, and used to spend many months in each year collecting in out-of-the-way parts of the British Isles, never, however, neglecting to take what he thought might be good things in other Orders, not excluding even small mammals and reptiles.

He, most generously, placed this material at the disposal of those who could make good use of it, and many private Collections as well as Museums benefited by his generosity. A collector with remarkable powers of discrimination in the field not only in recognising new or rare species, but also in selecting the most likely localities in which such species were to be found, his success in adding to our knowledge of the fauna of Diptera in this country was phenomenal. The study of wild nature was the one main interest in his life, so that when some ten years ago his eyesight began to fail, it was a greater calamity than to a man with wider interests, and he was subsequently seldom seen at a meeting of the Society.

Probably few of our Fellows really knew Col. Yerbury. A typical military bearing and a reserved and aloof manner successfully concealed from most people who met him, the kind and generous nature of the real man. To those who had penetrated this cloak of reserve his sad end meant the loss of a real friend.

By the death of GEORGE CHARLES CHAMPION* Entomological science has lost one of its most able exponents and the Society a Fellow who freely gave much valuable time and devoted service to its interests. Joining the Society in 1871 at twenty years of age, his position in Entomological science was already such that he was offered in 1875 a seat on the Council. In 1891 he became Honorary Librarian and occupied this important office for twenty-nine years. He retired from this post in 1920 and again served on the Council in 1921 and in 1924-25.

His name will always be associated with the history of our knowledge of the British Coleoptera, to which he contributed so abundantly, and still more so perhaps with that monumental work of Messrs. DuCane Godman and Osbert Salvin, the *Biologia Centrali Americana*, for which he collected most of the material, as well as being responsible for working out many of the Insects and acting as sub-editor for many of the 52 volumes. A very large number of other publications on British and Foreign Coleoptera have appeared as a result of Champion's untiring energy and capacity for work. For more than half a century he gave of his best to the science of Entomology and was happy in being in a position to devote all his time and energies to his favourite pursuit.

A man of fine, upright character, always willing to help others, thorough in all he undertook, a staunch friend and a loyal colleague, he will be sadly missed both in Entomological science and among the large circle of his friends.

* *v. Entom. Mo. Mag.*, lxiii, p. 197, and *Entomologist*, lx, p. 215.

GEORGE TAYLOR PORRITT,* who died at the age of 78, was elected a Fellow of the Society in 1870 and served on the Council in 1887. His interest in Entomology developed at an early age, his first contribution appearing in 1865, when he was seventeen years of age. An enthusiastic student of nature, he revived the flagging energies of the local Naturalists' Societies in the neighbourhood of his home in Yorkshire, especially The Huddersfield Naturalists' Society and the West Riding Consolidated Naturalists' Society. Undeterred by the failure of two previous attempts to establish an Entomological Journal for that part of England, he founded in 1875 and carried to success the monthly Magazine known as *The Naturalist*, and was an Editor or assistant Editor for the long period of fifty-one and a half years. Though primarily devoted to the study of the Lepidoptera and author of a model "List" of the Yorkshire fauna in that Order, he was interested in several other Orders and became an authority on the Trichoptera. In later years he devoted much attention to the problems of variation and melanism.

An honoured member of the Entomological Club, by his meetings held at the "Hand and Spear," Weybridge, a well-known meeting-place of the early pioneers of British Entomology, he worthily carried out the traditions of that ancient guild which has done so much to forward Entomological interests in this country.

A typical Yorkshireman, brusque and hearty, devoid of all snobbishness, kind and generous, he will long live in the memory of all who knew him. Passionately devoted to the study of Nature, he could not, even in his last illness when the exertion meant subsequent suffering, resist the lure of a tramp across the charming country-side of his beloved Yorkshire to see in their natural surroundings the birds, insects and flowers he loved so well.

JOSEPH JACKSON LISTER † was a general Zoologist of very wide knowledge who will best be remembered for research work in the Foraminifera. Both his father and grandfather had achieved scientific distinction, and Lord Lister was his uncle. In his early days he was an ardent collector of Lepidoptera and Coleoptera, and ransacked Epping Forest near his home at Leytonstone for specimens. After graduating at Cambridge and taking the M.R.C.S. qualification from University College, London, his health broke down and he spent some years travelling abroad. During those years he materially increased his knowledge of zoology, botany, anthropology and geology, and later published several important papers. Returning to Cambridge in 1891 he accepted appointments in connection with the School of Zoology and began his investigations in the morphology of the Foraminifera. In 1899 he was made a Fellow of St. John's College and in 1900 a Fellow of the Royal Society. Of late years ill-health caused him to live a retired life at Grantchester, and he then returned to his early love of Entomology, and became a keen collector and student of British and Palaearctic Butterflies, especially studying variation and contributing some short notes to the Entomological magazines. He also spent much time in revising, naming and adding species to the Collection of Palaearctic Butterflies in the Cambridge University Museum. He joined our Society in 1914.

* v. *Entom. Mo. Mag.*, lxiii, p. 76; *The Entomologist*, lx, p. 73, and *The Naturalist*, March 1927, p. 83.

† v. *Nature*, March 5th, 1927, and Special Obituary No. of *Proc. Roy. Soc.*, 1927.

I am much indebted to Dr. Hugh Scott and Prof. S. J. Hickson of Cambridge for the particulars included in this notice.

SIR JOHN TALBOT DILLWYN LLEWELYN, Bart., was a Fellow of the Society for sixty-two years, having been elected in 1865, the same year as the two surviving senior Fellows, Rev. A. E. Eaton and Mr. G. F. Matthew. His father and grandfather were both Fellows of the Royal Society, the latter being the famous Lewis Weston Dillwyn, the friend of Kirby and Banks. When Mr. Llewelyn (as he was then) joined the Society he was an enthusiastic student of the Lepidoptera, and was assisted by an equally enthusiastic colleague—his head gardener, Robert Stafford. The death of the latter—"his dear old friend and gardener," as he called him—upset him so much that he lost interest in Entomology. He never, however, lost touch with the Society, for as late as 1921 he sent a donation towards the purchase of this, our present home, and he continued to do a great deal to encourage other workers, his estate, gardens, house and collections being always open to any brother Entomologist.

He lived to the great age of 91, and one of his fellow-countrymen has stated in an obituary notice that "no Welsh Squire has ever led a more busy and useful life or conferred more actual benefit on the people of his county. He stood out as a conspicuous example of high ideals of public duty faithfully and conscientiously fulfilled throughout a long and honorable life."

E. W. ADAIR, a Fellow of the Society since 1914, was a native of the Channel Isles who graduated at Oxford and subsequently entered Government service in Egypt, from which he recently retired to take up his residence at Nîmes in France. He was interested in the Orthoptera, especially MANTIDAE, and contributed several papers to the *Bulletin of the Egyptian Entomological Society*.

STANLEY ARTHUR BLENKARN, who joined the Society in 1921 at the age of thirty-nine, was an energetic and successful collector and student of the Coleoptera. He was an old Dulwich College boy, employed in the service of the Westminster Bank. By his tragic and untimely death, due to a motor-cycling accident, Entomological science has lost a promising recruit.

SIR G. T. GILBERT-CARTER for many years occupied important official administrative posts in the Gold Coast, Lagos, Gambia, and The Bahamas. He was interested in the Lepidoptera and joined our Society in 1895.

D. H. PEARSON of Beeston near Nottingham, who was elected a Fellow of the Society in 1911, was a keen collector of European plants and butterflies and regularly contributed notes of his captures to the Entomological magazines. For many years he spent his holidays in the Alps and Pyrenees, and acquired a very extensive knowledge of their fauna and flora, which he was always ready to place at the service of his friends.

T. F. P. HOAR of St. Albans, Herts, a Fellow of the Society since 1907 and frequently present at our meetings, was another of those Lepidopterists to whom the varied fauna of the Swiss Alps proves so great an attraction.

REV. J. H. HODSON of Lytham, Lancashire, though little known to most of us, had been a Fellow of the Society since 1888.

L. GREENING joined the Society in 1922.

Among those Entomologists not Fellows of the Society, who have died during the year, I should like to refer to the following :—E. A. BRUNETTI,* an enthusiastic student of Diptera, who in spite of many difficulties succeeded in collecting together a large amount of material in Oriental species and described many new forms. He bequeathed his collections to the South Kensington Natural History Museum, where in later years he did much of his work. E. A. NEWBERY,† a man who, during a long life more full than usual of misfortune and adversity, yet found time, and without doubt some relief from his troubles, in acquiring such a knowledge of the British Coleoptera as to become an authority on the subject. C. M. WOODFORD, an Entomologist who made extensive collections of Lepidoptera in the Solomon Isles, Fiji, New Hebrides, etc., and one who much enhanced the value of this work by the careful and accurate data which accompanied his specimens. I shall refer later to the loss of SIR ARTHUR SHIPLEY and PROF. ADRIAN STOKES.

I now propose to occupy your time with a few remarks upon—

THE RECENT GROWTH OF INTEREST IN ENTOMOLOGICAL SCIENCE AND ITS EFFECT UPON ENTOMOLOGISTS AND ENTOMOLOGICAL SOCIETIES.

It is a matter of history that any real advance in scientific knowledge was seriously hampered for many centuries by the ignorance, superstition and religious fanaticism of not only the governing classes of those times but also of the general public. Indeed it would appear that public opinion has always been a much more important factor in what may be called the evolution of knowledge than is generally recognised. For a long period any interest in science was looked upon as an indication of an attempt to be in league with the devil, and anyone so interested ran considerable risk of suffering a violent death at the hands of his fellow-men. Even when such risks no longer existed, a scientific investigator had to be prepared to face what practically amounted to social ostracism. He was considered to be at least “peculiar” if not actually mad. Little wonder, therefore, that science received but few recruits. Even in recent times the very prevalent idea that anyone interested in the study of insects must of necessity be suffering from a mild and harmless form of lunacy was, and to a certain extent is still, a deterrent to the advance of knowledge in our favourite science. There is—and with the majority of people probably always will be—a genuine dislike to be thought “peculiar,” quite sufficient to make many disinclined to lay themselves open to such a charge. This repressive influence of public opinion may be of some advantage to mankind in the sphere of social morality, but it has certainly been in the past a potent factor in preventing the advance of scientific knowledge, and we cannot be sufficiently thankful, therefore, to those pioneers who refused to be repressed and carried on their researches in spite of the jeers and sneers of their contemporaries.

* v. *Entomologist*, lx, p. 142, and *Entom. Mo. Mag.*, lxiii, p. 236.

† *Entom. Mo. Mag.*, lxiv, p. 15.

The attitude of the general public towards those who were trying to probe and elucidate the secrets of Nature became tolerable and even commendatory in the case of many branches of scientific investigation long before any change of attitude could be noted towards Entomologists. It is not difficult to find a reason for this. Many such scientific discoveries were commercially exploited with success, and the general public slowly began to realise that the work of scientists might be used as a means of making money, as well as of adding considerably to the comforts and pleasures of life; they grudgingly admitted the usefulness of such discoveries, but they had so long looked upon Entomology as a childish hobby that they continued to refuse to recognise the value of a knowledge of insect life long after attention had been called to the immense damage done by insects. There are, however, obvious indications that a rapid change of opinion is taking place in this respect, and the necessity of an accurate knowledge of insect friends and foes is beginning to be realised by at least the more enlightened members of the community. Can we trace the discoveries or developments that have given rise to this increased interest in Entomology?

One cannot think that investigations proving the immense depredations made by insects upon our food products can have had much effect. Publications on this subject appeared in this country more than one hundred years ago, while from 1840-1860 John Curtis was busy bringing to the notice of the public in the *Journal of the Agricultural Society* the serious diminution of the amount of home-grown food due to the action of insect pests. Others, continuing investigations in the same subject subsequently, have had very little notice taken of their work. As a matter of fact the cultivation of large tracts of land and the planting of one crop on large areas has been carried on for so many centuries in this country that a certain balance has been arrived at between the three factors of cultivated crops, injurious insects attacking them, and the parasitic and other enemies of the injurious insects. Violent fluctuations in the numbers of any particular injurious insects seldom occur. The losses due to such pests—serious as they are proved to be—are fairly constant and for that very reason receive less notice than they deserve. One thing is certain, this state of equilibrium was not reached without a struggle in which the injurious insects would often get the upper hand, and may then have caused some of the famines from which our ancestors periodically suffered. It is probable that the more recent discovery of the intimate association of insects with diseases affecting both mankind and animals has had a much greater effect upon public opinion. So long as insect pests caused no serious shortage of food or increase in its price no one was much interested, but the thought that the bite of an insect might mean the injection of disease germs into the system gave a more personal turn to the subject which made it much more alarming.

So far as the British Government is concerned, any active interest in Entomological science may be said to date from the discovery that malaria, sleeping sickness, yellow fever and other diseases were insect-borne, and that the only hope of controlling such diseases lay in the control of the insects responsible for their dissemination. The same discoveries caused medical men to take an interest in Entomology and to realise the necessity of obtaining a thorough knowledge of all biting insects, and the advisability of making a study of their habits and distribution. This has especially been the case with medical men working in tropical

countries, where the incidence and virulence of insect-borne diseases is much greater. Indeed, not only on the Medical side but also on the Agricultural side, the value of Entomological research has been forced upon the attention of residents in our Colonies. They found (just as the inhabitants of the United States found) that the fight against insect pests was a much more serious matter in a new country where the "balance of nature" was being completely upset by the destruction of the old mixed type of vegetation and the substitution of large tracts of country given up to a single crop. Insects deprived of their natural food would turn their attention to the cultivated crops, often with disastrous results, while other insect pests accidentally imported (nearly always without their natural parasitic and predaceous enemies), finding ideal conditions under which to live, would increase and multiply to an incredible extent. The colonists could successfully fight against larger foes, but they had no knowledge of the way to tackle these smaller insect enemies, and they called for the help of experts. There thus arose, both on the Medical and Agricultural sides, a demand for trained Entomologists which no Government could continue to ignore, and a new career became available to young men with a bent for natural history. Schools and Universities quickly proceeded to offer facilities for the necessary training and many positions have been filled, but the demand for suitable men is still greater than the available supply. The Colonial Office (the Government Department by whom these appointments are made) quickly realised the necessity of some scheme for keeping these Entomologists scattered throughout our Colonial possessions, in touch with the work being done by the army of research workers throughout the world, and inaugurated the "Imperial Bureau of Entomology," which issues the *Review of Applied Entomology* and the *Bulletin of Entomological Research*. The recognition of the value of natural parasites in the control of injurious insects has led to further activities by the Imperial Bureau in the establishment of special laboratories for the study of parasites and the rearing in quantities for distribution throughout the Empire of such as are proved to be instrumental in the control of individual pests.

Active interest in Entomological science has not been confined to the Colonial Office. The necessity of taking precautionary measures against the dissemination of disease by insects having been abundantly proved in the case of military troops in the field has caused the Ministry of Health to recognise the advisability of investigating the part played by insects in affecting the health of the community at home. Finally, the necessity of producing the maximum quantity of food in this country during the War forcibly brought the losses due to insect pests to the notice of the Ministry of Agriculture and obliged them to take steps to increase very considerably the staff of their Department responsible for the application of Entomological Research work, to the needs of those producing food for the community.

It is doubtful whether in the ordinary course of events all these remarkable developments would have had much influence on public opinion if it had not been for the publicity given to the subject by the Press. Scientific Entomologists and Entomological Societies have never publicly advertised their work; they have been content to make it available to others interested in the same subject and leave posterity to assess it at its proper value. In the past they could hardly have done otherwise without running a risk of being held up to ridicule, but such is no longer

the case, and we must give credit to the authorities of the Natural History Museum for an early recognition of this fact; they have for some years past been advertising, by Show Cases in the Public Galleries and otherwise, the dangers to health from insects, with the result that the Public Press has become interested, frequent notices on matters Entomological have been published, and the education of the public in the value of Entomological Research has consequently made rapid strides. As a sample of this kind of educational work I give the following extracts from a leading article published in the *Daily Telegraph* on September 24th on the death of Sir Arthur Shipley and Prof. Adrian Stokes, entitled "Science and Life."

"The loss of two such servants of knowledge as Sir ARTHUR SHIPLEY and Professor ADRIAN STOKES may well make us reflect upon the debt which human life now owes to scientific research and the dependence of the future of mankind upon the extension and the application of scientific knowledge. It is not long since the work of the man of science was commonly regarded as something remote from human affairs. Yet the work of both these men was potent in the alleviation of human suffering and in the development of the resources of mankind.

"Many of us do not realise how much help science has already given us in resisting and controlling the destructive forces of Nature, how much more may be hoped.

"At present one-tenth of the products of agriculture, according to the accepted estimate, go to feed insects. With some crops, such as cotton, the loss is much greater. This is a heavy tax on the primary and fundamental industry of mankind. We now have every reason to believe that it can be much diminished—that is, that the productivity of the earth can be made much greater, and human comfort and prosperity much increased—by the help of entomology.

"It was in 1879 Manson proved that disease was carried from one human being to another by a mosquito. Twenty years more were needed before Sir Ronald Ross discovered that the mosquito conveyed the infection of malaria, and the first great triumph of medical entomology was won. Adrian Stokes came to the study of medicine when the importance of this discovery was being fully recognised. He gave his too short career—and, we must add, his life—to the investigation of the manner of infection in diseases for which a similar cause may be suspected. There are many. Sleeping sickness we now know to be spread by some species of fly. Certain rat fleas convey bubonic plague. 'Trench fever,' like typhus, was due to lice. To make certain of these causes is in general to discover a reliable means of preventing the disease. The work of a generation has thus sufficed to give us the power of effecting a vast amelioration in the conditions of human life; nor is there any reason to suppose that we have reached the limits of knowledge in medical entomology.

"Shipley in his undergraduate days turned from medicine to zoology, from applied, we might have said once, to pure science. But one of the lessons of the last century is that no science is so pure, so abstract, that it cannot be applied to the common conditions of our life. The Cambridge of his youth was already fostering zoological research, and Shipley soon won a high place among its teachers and investigators. The bent of his mind was not so much towards the opening up of new paths of research as towards the relation of scientific knowledge to the needs of the time. When Shipley began his work upon the invertebrates, entomology was still, as it had been in the days of Aristotle, the study of insects for their

own sake, or for the sake of knowledge. The very possibility of such developments of it as economic entomology and medical entomology was hardly conceived. Yet the benefits which those two branches of it have already conferred upon the world are vast, their potentialities beyond our imagination."

The examples of applied Entomology referred to by the writer of this leading article are those most prominently before the public, but there are others of equal (though perhaps less direct) importance to the community, notably the use made of insects by geneticists in their work on heredity and variation. Owing to the ease and rapidity with which many species may be bred, it is certain that a much-extended use will be made of insects for this and similar purposes in the future.

That the value of Entomological Research is receiving increased recognition by the public cannot, I think, be denied, and as the chief factor in creating an interest in the subject has been the part played by insects in the dissemination of disease, you will, I am sure, expect from me some reference to the prominent position occupied by the *Diptera* in this matter.

The transmission of infection by insects is carried out either by direct injection into the blood stream by bites or through wounds or by contamination of our food or person. The *Diptera* contain a larger number of blood-sucking species attacking mankind than any other Order, while there are numerous other species attracted to wounds, sores and perspiration, as well as domestic species with the habit of visiting excreta and other filth, and subsequently crawling over our food or our person. Medical Entomology has therefore always been most closely associated with a study of the *Diptera*, and as a result this most neglected Order of insects is at last receiving the attention it has so long deserved.

The gradual recognition of the necessity of making a serious study of insects is also shown by the large increase in recent years in the numbers of workers and the much wider diffusion of those workers throughout the world. At one time practically the whole of the published work on Entomology was European in origin; now there is hardly a single country not producing Entomological literature, while in some countries like America, where fifty years ago there were not more than a dozen writers on Entomological subjects, there is now an army of workers producing more subject-matter than the numerous scientific magazines and periodicals are capable of publishing. In order to give some idea of the general increase in Entomological literature I quote some figures extracted from volumes of the *Zoological Record*, beginning with 1870, the first year in which some of the information was forthcoming:—

	Number of Journals dealing with Zoological subjects.	Number of New Genera Published.	Number of Separate Papers on Insecta only.
1870	172	708	
1877	233	885	
1885	528	1066	375
1913	2087	2543	2967
1926	1359	2262	3096

The disturbing effect of the War is plainly seen in these figures, but the all-round increase since 1885—a date well within the memory of many in this room—is a sufficiently startling proof of the growth of Entomological work in recent years, and everything points to a still larger increase in both workers and publications in the future.

One would naturally conclude that the greater the number of workers in any particular branch of Science the more rapid and certain would be the advance in knowledge. That this is true in most branches of scientific investigation cannot be denied, and it is equally true in some Entomological work, including medical and economic, but in the still more important systematic or taxonomic work (important because exact identification is a fundamental requisite in all branches of applied Entomology) certain difficulties become greater with every increase in the number of workers and amount of work published, until a point will be reached when, unless drastic steps are taken to overcome the difficulties, any further progress becomes impossible. Some of these difficulties were foreseen and pointed out by Wiedemann more than 100 years ago in the first few pages of his *Zoological Magazine*, published in 1817. Quite recently the same subject has been dealt with by Prof. J. M. Aldrich in an address entitled “The Limitations of Taxonomy,” delivered on completion of his term of office as President of the Washington Entomological Society.

I can give the more important of these difficulties under four headings.

1. The assembling of a library and keeping it up to date.

A large number of important works of reference are unprocurable even at the present time, and the number will inevitably increase, making the formation of a complete new library almost impossible. It will be equally impossible with any further increase in published work for the possessor of a private library to hope to keep it completely up to date even when restricted to the publications relating to a single one of the larger Orders of insects. That this is already impossible for a Society with limited means whose library covers a much wider field is a fact well known to most of us.

2. The compilation of indexes of genera and species and keeping them up to date.

The *Zoological Record*, indispensable as it is to a taxonomist, by no means meets all his needs. He must have an up-to-date alphabetical list of all published genera in Zoology, and must add to his Systematic Catalogue the names of all new genera and species in their proper places, and insert references to all other systematic work under the various genera and species concerned. All this labour will become increasingly difficult not only because we must look forward to the inclusion of an immense number of genera and species awaiting collection and classification, but also because a generic or specific name, owing to the application of certain Rules of Nomenclature, may (for a time at least) convey not a definite meaning as intended, but one of two or three quite different meanings, and in consequence the insertion of a reference under its correct heading can often only be done by a specialist. That the probable number of species in the Insecta has been vastly under-estimated in the past is now universally acknowledged. The number of described species has increased at such a rate that we have seen the resultant narrowing of the field of work of any taxonomist from one covering all the orders of insects to that which

includes only a small group of families, or even a single family or large group of genera in an Order. This narrow specialisation has many disadvantages; it tends to cause a loss of perspective and a failure to grasp the true meaning or value of the higher categories and must delay the production of a sound classification. The tendency of the present day to give generic names to groups of species, family names to subfamilies, and so on, is probably a result of this specialisation.

3. The physical difficulty of examining type-specimens scattered in museums and private collections all over the world.

This is an obvious difficulty which increases as the number of widely distributed describers and consequent creation of type specimens increases, and yet, without undertaking this work it is often impossible to recognise a species owing to the lamentable lack of knowledge on the part of some describers of the true distinctive characters of the species concerned.

4. The difficulties inherent in our Rules of Nomenclature, notably the necessity of recognising all work—good, bad, and indifferent—as of equal nomenclatorial value.

I have no intention of bringing into the ambit of this Address the thorny subject of Nomenclature, but anyone who has done taxonomic work must have had experience of the labour involved in trying to clear up the tangled synonymy caused by the faulty work of previous describers. The arrears of work in this respect are still enormous, and any increase in the amount of published work will under present conditions only tend to add to them. Moreover, very little of any work of revision is final. Finality in nomenclature appears to be a will-o'-the-wisp which retreats further away with every attempt to approach it. To add to the trouble there is even in process a gradual undermining of the very foundation stone of nomenclature—faith in our ability to define a species.

It is obvious, therefore, that it is the taxonomist whose position will become increasingly difficult in the future, especially the isolated worker, and it must be remembered that in the past it is just such students who have been responsible for some of the best taxonomic work. There is every appearance that in the near future such work will be confined to students in large institutions, and the isolated taxonomist will be driven to take up some other line of research. A good taxonomist is born and not made; the work demands certain qualities of mind and exceptional abilities in certain directions which are not present in every individual and Entomology can ill afford to lose the services of a single one. It is easy to call to mind cases of havoc wrought by Entomologists, some of them working in institutions, who though completely unfitted for the task have been commanded by their superiors, or given facilities, to carry out taxonomic work, and have only succeeded in piling up a mountain of trouble for their successors. I see little hope for the completion of our work of classification unless we agree that taxonomic work failing to reach a certain standard shall be ignored. Fortunately there is in Entomology a very large field of study outside taxonomy in which incompetence on the part of a worker is no serious drawback to future progress; one can build up on the good work and entirely ignore that which is bad. There has already been a very great advance in knowledge in many directions in this field of study, and one can confidently anticipate rapid progress in the future.

There remains for consideration the effect of a general increase of interest in

Entomology upon a Society such as our own. A certain increase in the number of Fellows can be faced with equanimity as providing a welcome addition to our income. The equally certain increase in the number of papers sent to us for publication will be a more difficult matter to cope with, and the selection of the comparatively small number which our funds will allow us to publish may well become a problem in the future. There will also almost certainly be a considerable increase in the number of those wishing to make exhibits at our meetings; the time available for this purpose is already all too short and is causing many Fellows to refrain from bringing forward interesting exhibits for fear of making the meetings last too long. By far the most serious difficulty, however, will lie in obtaining the publications required for the Library. The Library will become of greater importance to Fellows as time goes on than it has been in the past, for as the difficulties of forming a private library become greater, so the use of the Society's Library will increase. The amount spent on this department of the Society's activities must inevitably be augmented; but however large the amount may be, it will be money well spent, and any help in supplying the Library *lacunae* will always be one of the greatest benefactions the Society can receive.

Now the reason why I have selected this subject for my address is by no means because I imagine that it is one upon which it is possible for me to bring forward any novel ideas. Indeed it is probable that I have only given expression to what many of you have long recognised as well-known facts, but I wish to impress upon you that it is the duty of the Entomological Society, as representing Entomological Science in this country, not to lag behind in recognising the changing conditions due to the altered status of that Science. It cannot be expected that Entomological organisations throughout the country suited to the old conditions will be able to carry out their duties satisfactorily in the future without some important changes. There must inevitably be greater co-operation and co-ordination of effort in Entomological work in the future. It must also be the duty of this Society to recognise the difficulties that lie ahead in regard to taxonomy, and to advocate such changes as may be necessary to meet them. Prof. Aldrich in the address to which I have referred found it hard to be optimistic in regard to the possibility of overcoming these difficulties. I do not share his views, for I believe that once the nature of the obstacles are thoroughly understood and recognised, organised international effort will succeed in arranging that such obstacles shall not hinder the completion of the task Entomologists have set themselves to perform, viz. the classification of the Insecta of the World and the attainment of a complete mastery over their powers for good and evil, so that they may be directed and controlled for the benefit of the human race.

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